# The Development of Bilingual Proficiency from Home to School: A Longitudinal Study of Portuguese-Speaking Children

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**Ontario Institute for Studies in Education**

July 1989

This study was funded by the Ministry of Education under its Block Transfer Grant to OISE

ON05805

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OISE

# PROJECT REPORT

Progress Report: _____ Final Report: x Project Number: 83-1065

Small-Scale: _____ Large-Scale: x Funding Year: ~~87-88~~ 1988/89

Transfer Grant: x (Priority: M3 ) OISE: _____

New: X Continuing: _____ Terminated: ~~x~~ Re-funded: _____

Project Title: The Development of Bilingual Proficiency from Home to School:
A Longitudinal Study of Portuguese-Speaking Children

Investigator(s): Jim Cummins

Budget Unit: MLC Date Rec'd in F&SR: AUG 1 1 1989

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## ABSTRACT


**For large-scale projects, please provide in the space below an abstract of not more than 300 words, single-spaced, written in a language that may be understood by the informed layperson. For small-scale projects, an abstract per se may not be appropriate, and the report itself may be started below.**

This longitudinal study is designed to describe the development of conversational and literacy-related language skills in both English and Portuguese and to investigate the relationships among proficiency in both languages. The specific goals of the study were to:

(1) describe the processes through which Portuguese-background children in the early years of school develop proficiency in both English and Portuguese conversational and academic skills;

(2) investigate the relationships between the development of proficiency in English and the proficiency levels that children have attained in Portuguese;

(3) describe patterns of interaction in children's homes with respect to their influence on the development of Portuguese and English proficiency.

One-and-a-half hours of children's interaction in the home was recorded when children were in junior kindergarten (JK) and a battery of tests in L1 and L2 derived mainly from Marie Clay's (1981) work was also administered to assess the development of pre-literacy skills. In addition, in grade 1, the Gates-McGinitie reading test was administered to assess reading achievement.

The findings showed a pattern of language shift from Portuguese to English that begins as early as children's first year in school (JK) and progresses rapidly such that a large majority of children were judged more proficient in English than in Portuguese by the end of grade 1. This shift occurs despite the fact that Portuguese contined to be the primary language used by parents in talking to their children. In general, a close relationship was observed between the development of Portuguese and English skills, both conversational and literacy-related. In other words, children who were developing high levels of proficiency in literacy-related aspects of language in Portuguese also tended to develop similarly high levels in English. A similar, though less pronounced, pattern of cross-lingual relationship was observed for conversational skills. Conceptual maturity, as measured by the Draw-a-Person test at the JK level was strongly related to conversational and literacy-related development in both languages. It was concluded that access to English was not problematic for these children and therefore a unitary developmental process underlies conceptual and linguistic growth in both languages.

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# The Development of Bilingual Proficiency from Home to School: A Longitudinal Study of Portuguese-Speaking Children

## Introduction

This study is designed to describe the development of conversational and literacy-related language skills in both English and Portuguese among a sample of Portuguese-background students in Junior Kindergarten, Senior Kindergarten, and grade 1 and to investigate the relationships among students' developing proficiency in both languages. The study's primary goals are:

- describe the processes through which Portuguese-background children in the early years of school develop proficiency in both English and Portuguese conversational and academic skills;
- investigate the relationships between the development of proficiency in English and the proficiency levels that children have attained in Portuguese;
- relate patterns of interaction in children's homes both to their current skills in Portuguese and English and also to their subsequent academic progress in each language.

The context of the study is the continuing international debate on the causes of school failure among certain minority groups and the role of children's first language (L1) in their academic development. A substantial number of educators oppose the teaching of children's L1 in the school on the grounds that it will interfere with the learning of English and jeopardize children's educational potential (see Cummins and Danesi, in press). It is also still common for teachers and psychologists to advise minority parents that they should use as much English as possible in the home in order to facilitate their children's academic progress (see Cummins, 1989).

When these common assumptions are examined in light of current research data they appear quite problematical. There is no evidence that teaching heritage languages in the school interferes with children's acquisition of English or other academic skills (Cummins, 1983). Similarly, the data on minority students' use of L1 in the home suggest that those who maintain their L1 have better academic prospects (Dolson, 1985).

In general, two major trends emerge from data on the language learning and academic achievement of minority students: first, there are significant individual differences within specific minority groups; for example, Wong Fillmore's (1976) one-year longitudinal study of five Mexican-American kindergarten children showed that one child (Nora) learned more English in three months than several of the others learned in an entire year; she attributes this finding to the socially assertive characteristics of this child and to the fact that she sought out English-speakers to interact with. The second major trend concerns group differences; specifically, the fact that in Canada, The U.S., and Sweden there are extremely large differences among ethnocultural groups in the extent of academic achievement in the

[1]We would like to thank Margarida Aguiar and Mary Lou King who collected and helped analyze part of the data reported here.

school language. In the United States, for example, Black, Native American, and Mexican-American children tend to perform well below the levels of Anglo-American or Asian-American children (see Cummins 1984, for a review of these data). In Canada, the most extensive documentation of school placement and achievement of different ethnic groups comes from data gathered by the Toronto Board of education over a 15-year period (see e.g. Wright and Tsuji, 1984). These data show Portuguese-background students in lower academic placements than any of the other minority language groups, with the exception of Franco-Ontarian students.

There is still no consensus in the literature concerning the causes of these group differences in academic achievement. The data clearly cannot be explained by linguistic or individual psychological factors alone since different groups are exposed to the same language switch between home and school and all are growing up in a minority context. Similarly, factors related to socio-economic status (SES) cannot fully account for the data since lower SES children from some ethnocultural groups (e.g. Chinese in the Toronto Board data) perform almost as well as higher SES children from the same groups and considerably better than children from other groups. SES is also insufficient to account for the data in the United States context (Cummins, 1984), although it is clearly an important influence. Several investigators have pointed to power and status relations between dominant and subordinate groups as a significant factor in accounting for group differences in academic acheivement (Cummins, 1986; Ogbu, 1978) and an intervention model for reversing these trends has been elaborated (see Cummins 1986, 1989).

Linguistic interaction in the home prior to and in the early years of schooling mediates the influence of societal power and status relations and directly affects the development of both conversational and conceptual abilities, as Wells' (1986) research has shown. Specifically, students' school progress was strongly predicted both by the quality and quantity of interaction they experienced with adults and by their knowledge of literacy prior to school (as measured by Clay's [1981] Concepts about Print test). In bilingual contexts, the level of development that minority children attain in their L1 prior to formal schooling appears to be a significant predictor of future academic growth in their L2 (Cummins, 1989). Thus, our study attempts to document the level of Portuguese language skills that children in a minority context attain in L1, in comparison to the level attained in English, and to examine the extent to which the increasing exposure to English in Senior Kindergarten (SK) and grade 1 affects both the development of Portuguese and English skills.

The distinction between conversational and academic language skills is based on data showing that minority childrn often develop peer-appropriate conversational fluency in their second language within two years of exposure but it takes approximately five years on average for students to attain grade-appropriate academic skills (e.g. reading and writing achievement) (see Collier and Thomas, 1987; Cummins, 1981) These data have major implications both for teachers' expectations of students and for the administration of standardized ability and achievement tests. Particularly within the context of Ontario's special education legislation (Bill 82) which mandates identification of exceptional children as early as possible, failure to take account of the distinction between conversational and academic skills development in both L1 and L2 is likely to lead to significant over- and under-representation of minority children in special education classes. In other words, in the absence of greater understanding of processes of bilingual development as they relate to school achievement, and appropriate procedures for assessing children's bilingual development, identification of exceptionality is likely to be highly unreliable. The susceptibility of Portuguese-background children to inappropriate identification and placement procedures is particularly evident in view of their generally low achievement in

school and overrepresentation in lower academic streams at the high school level (Wright and Tsuji, 1984).

## Design and Methodology

**Subjects.** The sample for the longitudinal study consisted of 24 Portuguese-background students who in 1985 were attending JK in a school of the Metropolitan Separate School Board in the City of Toronto. During JK and SK, each one of these students attended a 30-minute daily program of Portuguese language and culture that is integrated in the school day. The school, where about 90% of the students are of Portuguese background, is located in a predominantly Portuguese-populated area in the inner city. The students were all born in 1980 and were five years old at the time of initial data collection. Participation in the study was voluntary and letters of permission from parents were obtained. As a result of attrition, the sample size dropped to 19 at the SK level and 14 at the grade 1 level.

The students were taped in the home for a one and a half hour period in JK. The tapings took place around the end of the school year and after 5 p.m. in order to permit analysis of the interaction between the children and the parents. In the first year of the study a questionnaire on language use and attitudes was developed and used to interview the parents. The questionnaire was filled in by one researcher while a second researcher wrote down any pertinent comments or opinions offered by the parents about their children and about the heritage language program.

**Instruments.** The various measures that were used in the study were selected on the basis of their potential to describe as comprehensively as possible the development of children's grammatical and pragmatic skills in both conversational and more formal (decontextualized) situations. Ability to use language that is disembedded from a normal conversational context is strongly related to children's academic skills development (see reviews by Clay, 1981; Cummins, 1984; Wells, 1986; Donaldson, 1978). The following measures were administered:

1. *Concepts About Print*. This test was developed by Marie Clay and appears in her book The Early Detection of Reading Difficulties (Clay 1981). The purpose of this test is to assess children's knowledge about the conventions of written language and the children's experience of literacy prior to school. The children are shown a booklet which contains both narrative text and illustrations. The children are told from the beginning to concentrate on the text rather than on the illustrations. The tester then reads to the child the text on each page and asks him/her a set of questions pertaining to certain conventions of the written language used in the text. The scoring was done according to the scoring criteria in the manual, i.e., each question out of a set of 26 was scored as either right or wrong. For the English version of this test the booklet Stones was used. The Portuguese test consisted of an adaptation of the alternative booklet Sand (Areia) and contained essentially the same set of questions. The test was administered to all students in the sample in Years 1 and 2.

2. *Sentence Repetition*. The Record of Oral Language (Clay et al. 1976) was used to provide both a quantitative index of children's level of language development and qualitative information about which grammatical aspects of the language (in both English and Portuguese) children had and had not yet mastered. The test consists of 42 sentences grouped into three levels of increasing complexity, level 1 being the easiest level. At each level there are seven types of sentences, as follows:

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Type A: SUBJECT + VERB 'TO BE' + SIMPLE STATEMENT
TYPE B: SUBJECT + VERB + DIRECT OBJECT
TYPE C: SUBJECT + VERB + ADDITIONAL CONSTRUCTION (which
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should not be a direct object)
TYPE D: SUBJECT + VERB + INDIRECT OBJECT + DIRECT OBJECT
TYPE E: SUBJECT + VERB + NOUN CLAUSE
TYPE F: ADVERB OR RELATIVE PRONOUN + VERB + SUBJECT
TYPE G: SUBJECT + VERB PHRASE + OBJECT + ADDITIONAL CONSTRUCTION
(e.g., adverb or adverbial phrase).

For example, sentences of Type E were as follows in the different levels: Level 1 -- "I guess we're lost."; Level 2 -- "The boy saw what the man was doing in the car."; Level 3 -- "The teacher knows how much wood we will need for the house". These sentences were read individually to each child starting with Level 1 and the child was asked to repeat them; however, if the students had difficulty with three or more sequential items at a certain level, testing was terminated.

A Portuguese version of this test was developed which also grouped into three levels of complexity sentences that had the same syntactic features as the English ones. Each student's performance in this test was taped, transcribed by native speakers of each of the two languages, and checked by other native speakers prior to scoring. Each of the items in the test was scored for: (a) exact repetition allowing for the use of dialectal variants affecting, in this case, certain pronouns, prepositions and verb endings, (b) exact meaning, i.e., maintenance of the original meaning in spite of possible changes that might include grammatical errors, and/or lexical additios, omissions and substitutions, and (c) number of grammatical errors and/ or mistakes consisting of addition, omission or substitution of any word. In the final quantitative analyses, however, only (a) and (b) were included because of substantial intercorelation of the three scoring procedures. Children's scores were computed as number correct as a percentage of total adminstered. The test was administered to all students in the sample in Years 1, 2 and 3.

3. *Letter Identification*. This test is described in Clay (1981) and was administered and scored according to the prescribed procedures, in both English and Portuguese. The purpose of including this test is twofold: (1) to examine how familiar the children were with the names of the letters of the alphabet in both English and Portuguese and (2) to provide an additional index of children's preschool knowledge of literacy. In the Letter Identification Test the children were shown a sheet of paper with all the alphabet letters. Prior to the test, the children were reminded of the language to be used (i.e., either English or Portuguese) while identifying the letters. The letters were shown both in capital and small letters. The testers pointed to a letter and asked the children to identify it. The children were tested individually and the scoring was done as the test progressed. The children's responses were scored either as right or wrong. This test was administered to the children in Years 1, 2 and 3.

4. *Draw a Person Test*. This test was adapted from the Draw a Man and the Draw a Woman Tests (Harris 1963). It is designed as a measure of the children's intellectual maturity. Unlike the detailed scoring proposed by Harris, which varies according to the gender of the person drawn, the drawings were scored globally on a five-point scale taking into account, where appropriate for the age group concerned, the detailed scoring criteria prescribed in the administration manual (e.g., presence of features such as head, eyes, fingers, clothing articles, etc.). This test was administered in a group situation to the children; the two testers involved gave the instructions in both English and Portuguese and the children then proceeded to draw a person. Pencils and a blank sheet of paper were provided by the testers. This test was administered to the children in Years 1, 2, and 3.

5. *Tapings in the home.* The spontaneous oral language of children was recorded by means of an AIWA (Model TP-M6) voice-activated micro-cassette recorder which was worn by the children. The purpose of this recording was to analyse the level of acquisiton of grammatical and pragmatic features of both English and Portuguese, as well as possible patterns of code switching. All children were taped in Years 1 and 2 after 5 p.m. for a one and a half hour period in the home.[2] During Year 1 each family was visited initially by a male and a female researcher but during Year 2 the data were collected by just one researcher. Children were encouraged to speak whatever language they wanted (English or Portugese). They were also told they should go about their normal routines as usual. No researcher was present while the home taping was being done. After the taping the children's oral production was transferred from a micro-cassette to a standard cassette, and the language interaction was transcribed. The transcription was checked by at least one other Portuguese native-speaking researcher.

6. *Parents' Questionnaire.* The parents' questionnaire consisted of 34 items concerning the family background and language use of each child, the amount of exposure each child had had to printed materials in the home, and the parents' attitudes and expectations concerning the child's linguistic proficiency. Family background questions focused on place of birth, parental birthplace, education and occupation. Language use questions concerned the extent to which Portuguese and English were used with family members as well as with babysitters, nursery school and/or daycare personnel. The questions concerning the amount of exposure to printed materials asked parents if the child had been exposed to books or magazines in the home, if any of the parents read/told stories to the child, and the extent to which each child could read or recognize certain letters of the alphabet before going to school. The question concerning parents' attitudes and expectations asked parents to what extent they expected their children to become Portuguese-English bilinguals. The questionnaire was administered by two researchers at the end of the first visit (Year 1). One of the researchers asked the questions and filled in the results while the other took notes of all comments the parents made. The questionnaire was followed by an open-ended discussion that focused mainly on the parents' opinion of the heritage language program and language learning in general. This questionnaire was adapated from the Language Use Questionnaire used in the Development of Bilingual Proficiency Study with grade 7 Portuguese-background students (see Harley, Allen, Cummins and Swain, 1987).

7. *Writing Vocabulary Test.* This test, also developed by Marie Clay, is described in Clay (1981). The test is individually administered and involves giving each child a piece of blank paper and asking him/her to write all the words he/she knows in five minutes, starting with the child's own name. Its purpose is to measure the amount of correctly spelled words each child can write, as a way of predicting his/her reading acquisition. In scoring, the following were taken into account: (1) all the words the student wrote, correctly or incorrectly spelled, including attempts at writing words that do not even exist in the lexicon (proper names were also counted); (2) the total number of words correctly spelled that are part of the lexicon. In the case of Portuguese it was decided that students would not be penalized for failure to use diacritics.

8. *Conversation Task.* This procedure was developed by project staff. Children were individually asked three questions designed to elicit particular verb tenses. All answers from the students were recorded on tape, transcribed and scored. In Question 1, the tester

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[2]Only the Year 1 (JK) data are reported here due to the fact that transcription and scoring of the Year 2 data is continuing.

asked the child for information about his/her family, such as where he/she lived, with whom, etc. This question aimed at eliciting from the child a series of obligatory contexts for the use of the present indicative. In Question 2 the tester asked the child about a trip the child had made by plane, boat or car. This question aimed at eliciting a narrative of past events where a number of obligatory contexts requiring past tenses would occur. In Question 3 the tester asked the child what he/she would do, should the child win $3,000,000 in the lottery. This question aimed at eliciting a series of hypothetical statements where the following tenses would be required: conditional in English and conditional, imperfect subjunctive and/ or imperfect with conditional or hypothetical apect in Portuguese. The scoring consisted of a count of the number of obligatory contexts for tenses in each question in relation to the number of tense errors (see Appendix 3). On the basis of these detailed scores, an overall rating on a 1-5 scale was made for both Portuguese and English interviews. Each interview was rated by both Portuguese-speaking researchers and inconsistencies were resolved through discussion.

9. *Gates-McGinitie Reading Test (Vocabulary and Comprehension).* This test is currently used in many primary schools across Canada was administered to the sample in Year 3.

**Scoring Procedures for Home Interaction Data.** For the purposes of quantitative analysis with a small sample of students, the home interaction data from the Year 1 transcripts were each assigned a score ranging from 1-5 on the basis of ratings of quality of interaction. These ratings were made by two native-Portuguese-speaking researchers who discussed and resovled any inconsistencies in the scores assigned. The ratings were made subsequent to a very detailed assessment of the grammatical and pragmatic aspects of children's discourse (see Appendix 2). Initially, based on Loban's (1963) research, the spoken discourse was transcribed, divided into communication units (C-units) and scored for grammar and pragmatics. For the purpose of our analysis we considered C-units as being constituted by an uninterrupted segment of speech that could not be further divided without loss of its essential meaning. Therefore, we disregarded in our C-unit count certain repetitions, fillers and edit mazes. After dividing the child's spoken discourse into C-units, we counted the number of words per C-unit as an index of syntactic sophistication.

*Grammatical Scoring.* To evaluate and describe children's acquisiton of grammatical proficiency, we designed a scoring scheme that would assess both the nature and number of errors as well as correct uses: e.g., number of verb errors in relation to number of obligatory contexts for verbs. The following specific categories were scored:

1. Word order
2. Degree of adjectives
3. Omission, addition or substitution of any word
4. Lexicon (related to the use of verbs)
5. Prepositions and prepositional locutions
6. Verbs

A full account of the scoring criteria is provided in Harley et al, 1987.

*Pragmatic Scoring.* Based on criteria elaborated by Damico, Oller and Storey (1983), we developed a pragmatic scoring scheme applicable to home interaction data. According to Damico et al, the main emphasis of a pragmatic assessment consists in analysing how efficiently meaning is conveyed between speaker and audience; this includes both the use of language in its social context and also the ability to map specific utterances onto particular contexts of experience.

In view of the fact that our sample was not recorded in an interview situation, we disregarded three categories from the Damico et al. scoring scheme: (a) delays before responding, (b) poor topic maintenance and (c) need for repetition on the part of the interiewer. We also blended two of the Damico et al. categories into one: i.e., where the authors have two categories, (a) linguistic nonfluencies and (b) revisions, we decided on a single category, Nonfluencies, subdivided in the following way:

1. Nonfluencies
   - (a) audible/silent pauses
   - (b) inappropriate use of repetitions
   - (c) filler words and phrases
   - (d) edit mazes

The other categories in our scoring scheme were:

2. Inappropriate or off-topic responses
3. Nonspecific vocabulary
4. Inappropriate use of anaphora and/or cataphora

For each one of the above categories we counted the number of occurrences. This was done directly from the tape while reading the transcripts. On the basis of the detailed grammatical and pragmatic scoring carried out for the JK students, a narrative description of the major characteristics of each students' interaction was written (see Appendix 1). In other words, each child was treated an an individual "mini case study" in order to present the detail of the language assessment in a manner that is comprehensible to the reader.

## Results

**Parents' Questionnaire.** The results of the Parents' Questionnaire are compiled in Appendix 4. A brief overview is presented here.

A majority of the parents were born in Mainland Portugal (11 fathers, 12 mothers) and the remainder in the Azores (8 fathers, 8 mothers). Most had completed only elementary school (e.g. 17 fathers, 14 mothers) and had been in Canada between 11 and 20 years.

The parents reported that most of the children used more Portuguese than English in speaking to them. For example, 10 of the children were reported to speak more Portuguese than English to their fathers, 5 about equal amounts of each language, and 4 more English than Portuguese. The equivalent figures for children's language to mothers were 9, 3 and 8. By contrast, both fathers and mothers spoke predominantly Portuguese to their children. The language of mother-father interaction was also predominantly Portuguese with 16 sets of parents using significantly more Portuguese and only 3 reporting equal use of English and Portuguese. Only four mothers reported using more English than Portuguese with their children and in no case were fathers reported to use more English than Portuguese with their children. On the other hand, the language of communication between siblings was predominantly English with only one child (out of 10) using more Portuguese than English to talk with older siblings and one (out of 7) more Portuguese to talk with younger siblings.

Many parents reported that their children listened to stories or folktales either often (7) or sometimes (11) and these were somewhat more likely to be told in Portuguese than in English. Most children (13) were reported to be able to recognize some letters and also their names (11) but no child could read words or sentences in books. The majority of children were also reported to look at books either alone or with an adult at least several

times a week.

Although all parents wanted their children to understand, speak, read and write Portuguese and considered that this would happen, only a minority (5 vs. 11) thought that their children would read and write Portuguese as well as English. Virtually all parents were in favour of the integrated heritage language program and many also intended to enroll their children in community-run after-school heritage language programs because they considered that 25 minutes per day was insufficient. Several (6) also expected that frequent summer trips to Portugal would help in Portuguese language maintenance.

In summary, the picture that emerges at the JK level is one of language shift already very much in progress. Although parents use Portuguese predominantly with their children, a significant minority of children were already using more English with their parents, especially with mothers. In addition, English has already become the dominant language between siblings.

**Home Interaction (JK) and Interview (Gr. 1) Data.** The narrative description of each child's home interaction data from JK with respect to degree of code-switching and overall patterns observed is presented in Appendix 1. These descriptions are presented together with descriptions of children's language patterns manifested in the oral interview at the grade 1 level.

With respect to code-switching, children frequently used English words when talking in Portuguese. the most frequently used words were: daddy, mommy, nice, juice, building, store, truck, farm and candy. These borrowings appear to have become part of the Portuguese community's "contact variety" in the Toronto context.

Despite the use of these borrowings, no student was observed to speak a random mixture of Portuguese and English. They tended to code-switch when using exclamatory expressions and when they got angry. Code-switching also occurred when talking about school-related activities or specific social situations associated with a particular language. The relative power of English in the environment can perhaps be gauged by the fact that whenever a child spoke to him/herself, English was the predominant language used. There was only one child who used both languages while talking to herself.

With respect to general patterns that emerged from the home tapings, English was the preferred language of the majority of children. Only seven children (out of 20) showed a marked preference for Portuguese, three showed roughly equal use of each language, while the remainder used English as their predominant language. These patterns again indicate how early the shift to English begins and how rapidly it progresses. For most children English has already become the preferred language despite the fact that they have been exposed to English for only a short period of time at school and Portuguese is still the predominant language used by parents and other adults in interacting with them.

The shift to English appears to gather momentum as the children progress to grade 1 in that they are clearly more comfortable interacting in English than in Portuguese. The mean rating on the English conversation task (on a 5-point scale) for English was 3.2 (standard deviation 1.1) and for Portuguese 2.4 (standard deviation 1.2).

On the basis of both home interaction and grade 1 conversation data, the most common grammatical problem encountered in Portuguese related to the use of appropriate verb tenses and simple verb conjugations. Other areas of incomplete development were gender

of nouns and indications of limited vocabulary knowledge.

Children generally were more fluent and at ease in speaking English but showed some problems with respect to vocabulary and the use of prepositions and verbs, especially past tenses of irregular verbs.

### Development of Literacy-Related Knowledge

The mean scores and correlations of the test data from JK, SK and grade 1 are presented in Appendix 5. On the Sentence Repetition task, children's performance in English was consistently higher than their performance in Portuguese (e.g. JK 30.1% correct English vs. 19.5% correct Portuguese, SK 46% vs. 23.9%, Gr. 1 69% vs. 40%). This may be due partially to lack of comparability of the English and Portuguese measures or it may reflect the process of language shift which is already occurring at the JK level.

The opposite pattern is observed on the Concepts about Print test insofar as large differences are observed in favour of Portuguese at the JK level (10.9 vs. 4.7) and smaller differences at SK (12.9 vs. 10.3) and grade 1 levels (18.4 vs. 16.9). The English grade 1 score falls into the 5th stanine according to norms provided in the test manual (Clay, 1981); however, the applicability of these norms to the present sample is not clear. Unlike the Sentence Repetition measure, this test does not involve processing of language as such; rather it reflects knowledge of conventions of print which, at the JK level, children would have had minimal exposure to in English at school. Again, caution must be exercised in making these cross-lingual comparisons because of possible lack of comparability of the measures and also testing transfer effects from one language to the other.

On the Letter Identification task, performance is considerably better in English than in Portuguese at the JK and SK levels with minimal differences observed by the time of grade 1 (48.1 English vs. 43.3 Portuguese. Performance is very low in Portuguese at the JK and SK levels (5.8 and 7.2 respectively) and the better performance in English at these levels probably reflects the impact of television programs such as Sesame Street as well as exposure to the alphabet in school in English.

On the Gates McGinitie Reading Vocabulary and Comprehension tests at the grade 1 level students mean scores were 20.1 and 19.1 respectively (21st and 31st percentiles respectively) with standard deviations of 7.9 and 8.8. The range of scores (out of a maximum of 40 for Vocabulary and 45 for Comprehension) were 9-35 for Vocabulary and 5 - 37 for Comprehension.

The correlations between Vocabulary and Comprehension and the other variables are presented in Table 1. Little relationship is observed with Portuguese Sentences Repetition at the JK and SK levels but the correlation with Vocabulary attains significance at the grade 1 level ($r=.58$ $p=.01$ exact repetition; $r=.50$ $p<.05$ meaning retained). The same pattern is observed for English sentence repetition with correlations attaining or approaching statistical significance for both Vocabulary and Comprehension only at the grade 1 level.

Correlations between Portuguese and English sentence repetition measures tend to be positive but non-significant with the exception of the grade 1 meaning retained measure ($r=.49$ $p<.05$) (see Appendix 5).

Considerably stronger correlations are observed between grade 1 reading measures and both Portuguese and English Concepts about Print after the JK level. The correlations

## TABLE I

**Correlations of Grade 1 Reading Vocabulary and Comprehension and JK Home Interaction Language Proficiency Index with other Variables**

| **Portuguese Variables** | JK Language Index | Grade 1 Vocabulary | Grade 1 Comprehension |
|---|---|---|---|
| 1. JK Sentence Rep. Exact | .60** | .11 | .32 |
| 2. JK Sentence Rep. Meaning | .59** | .03 | .32 |
| 3. SK Sentence Rep. Exact | .47* | .30 | .08 |
| 4. SK Sentence Rep. Meaning | .43* | .23 | .08 |
| 5. Gr 1 Sentence Rep. Exact | .44 | .58* | .32 |
| 6. Gr 1 Sentence Rep. Meaning | .51* | .50* | .30 |
| 7. JK Concepts about Print | .28 | .10 | .13 |
| 8. SK Concepts about Print | .54** | .51* | .61** |
| 9. Gr 1 Concepts about Print | .28 | .78** | .51* |
| 10. JK Letter Identification | .55** | .63** | .53* |
| 11. SK Letter Identification | 67** | .31 | .64** |
| 12. Gr 1 Letter Idenfication | .12 | .16 | -.05 |
| 13. Gr 1 Conversational Proficiency | .57* | .50* | .44 |
| 14. Gr 1 Writing Vocabulary | -.23 | .32 | .23 |
| 15. JK Language Index | | .35 | .57* |

| **English Variables** | JK Language Index | Grade 1 Vocabulary | Grade 1 Comprehension |
|---|---|---|---|
| 1. JK Sentence Rep. Exact | .26 | .36 | .19 |
| 2. JK Sentence Rep. Meaning | .28 | .35 | .25 |
| 3. SK Sentence Rep. Exact | .40* | .37* | .59* |
| 4. SK Sentence Rep. Meaning | .45* | .41 | .56* |
| 5. Gr 1 Sentence Rep. Exact | .58* | .49* | .58* |
| 6. Gr 1 Sentence Rep. Meaning | .61** | .51* | .59* |
| 7. JK Concepts about Print | .31 | .29 | .35 |
| 8. SK Concepts about Print | .40* | .48* | .77** |
| 9. Gr 1 Concepts about Print | .51* | .72** | .51* |
| 10. JK Letter Identification | .61** | .65** | .57* |
| 11. SK Letter Identification | .60** | .48** | .51* |
| 12. Gr 1 Letter Identification | .22 | .21 | .15 |
| 13. Gr 1 Conversational Proficiency | .78** | .54* | .50* |
| 14. Gr 1 Writing Vocabulary | .06 | .09 | .57* |
| **Conceptual Indices** | | | |
| 15. JK Draw-a-Person | .49* | 74** | .78** |
| 16. SK Draw-a-Person | .31 | .56* | .64** |
| 17. Gr 1 Draw-a-Person | .40 | .37 | .75** |

* $p < .05$
** $p < .01$

range from .48 (Vocabulary with SK English Concepts about Print) to .78 Vocabulary with Grade 1 Portuguese Concepts about Print). In general, the correlations between reading measures and English and Portuguese Concepts about Print are in the same order of magnitude which is to be expected given the strong correlations between English and Portuguese Concepts about Print (r=.33 [p=.05], .83, and .85 at JK, SK and Grade 1 respectively).

An interesting pattern is observed for Letter Identification in that correlations with grade 1 reading measures are considerably stronger at the JK level than at the grade 1 level. The same pattern is evident for both Portuguese and English. This is likely due to the fact that most children have learned the alphabet by grade 1 and there is less variance in the letter identification measure at that stage than at JK and SK. The strong relationships observed between knowledge of letters at the JK level (in both Portuguese and English) and subsequent reading achievement highlights the importance of the home environment in promoting children's knowledge of literacy and its functions.

The number of words written in both Portuguese and English at the grade 1 level did not attain significance except in the case of Words written in English and reading comprehension (r=.57, p<.05).

The Draw-a-Person measure was strongly related to reading (five out of six correlations significant), the relationships being particularly strong at the JK level (r=.74 and .78 for Vocabulary and Comprehension. These patterns suggest that this measure may be useful as a relatively culture-fair indicator of children who are at risk of school failure. The JK measure also showed a consistently high level of relationship with other measures that are predictive of grade 1 reading scores (e.g. grade 1 Portuguese and English sentence repetition, Portuguese and English Concepts about Print (particularly at the grade 1 level), Portuguese and English JK and SK Letter Identification, Portuguese and English Conversational Proficiency, and the index of language proficiency derived from the JK home interaction data.

The grade 1 Conversational Proficiency indices in Portuguese and English showed significant correlations with English reading measures (all p<.05 except Portuguese proficiency with Comprehension which was p<.06). The correlations are slightly higher in the case of English but the same basic pattern is evident. The relationship between Portuguese and English Conversational Proficiency is also significant (r=.56 p<.05), again suggesting a general pattern that underlies language and conceptual growth in both languages at this stage of children's development.

Finally, the index of language development derived from the home interaction data showed a significant correlation with reading comprehension (r=.57 p<.05) but not with reading vocabulary. This variable also correlated significantly with many of the other variables that were related to early reading attainment and was especially strongly related to English Conversational Proficiency (r=.78 p<.001). The equivalent correlation for Portuguese Conversational Proficiency was r=.57 (p<.05).

It is clear from the pattern of correlations that oral language development in the pre- and early school years is closely related across languages and also closely related to the development of reading skills in school. In other words, at this stage a general developmental process appears to underlie both conceptual and linguistic growth in both L1 and L2.

This pattern has important implications for the education of minority students in the early years of schooling. As noted above, it is still common practice in many school systems for educators to discourage parents from promoting their children's L1 in the home. The fallacy of this approach can be seen by comparing the reading performance in English of children who were maintaining their Portuguese proficiency as compared to those who were losing their proficiency. The mean scores in Vocabulary and Comprehension for those above the mean in Portuguese Conversational Proficiency at the grade 1 level (N=6, scores 3-5) were 24.67 (Voc.) and 23.50 (Comp.) compared to 16.62 and 15.75 for those below the mean (N=8, scores 1 and 2). In other words, there is approximately one standard deviation difference in performance difference in favour of those who are maintaining their L1 skills. This is not a direct causal relationship since, as suggested above, both reading attainment and Portuguese and English proficiency as well as conceptual growth appear to be reflective of a more general developmental process. However, the positive relationship between Portuguese proficiency and English reading attainment does illustrate how misguided the assumptions of some educators on this issue are.

## Conclusions

Several clear findings emerge from the data. First, the process of language shift starts very early in children's school career (and probably even before they come to school) and progresses rapidly. By the time children finished grade 1, only two (out of 14) were rated as more conversationally fluent in Portuguese than in English and only three rated as equally proficient in each language despite the fact that parents of a large majority of children spoke considerably more Portuguese than English to them at home.

A second finding is that both literate and conversational skills in children's L1 are significantly related to the development of literate and conversational skills in L2. In fact, the same developmental process appears to underlie growth in both languages in the sense that those who perform well in English literacy tasks tend also to perform well in literacy-related aspects of Portuguese, and conversational skills are also moderately related across languages. This interpretation is strengthened by the fact that conceptual maturity, as measured by the Draw-a-Person test at the JK level, is strongly related to literacy-related and conversational growth in both languages. This developmental pattern points to the fallacy and potential dangers in educators' frequent advice to parents that continued use of L1 in the home will jeopardize their children's academic prospects. It would appear more appropriate for educators and parents to explore together ways in which the developmental process that underlies growth in both languages can be enhanced.

Part of this collaborative exploration must focus on ways in which the home and school can work together to reverse the erosion of the L1. The acquisition of conversational English is not a problem for the vast majority of children. In all four instances where children scored low (i.e. a rating of 1 or 2) on English conversational proficiency at the grade 1 level, they also scored low (1 or 2) on Portugese conversational proficiency. The two children who scored high (4 or 5) on Portuguese conversational proficiency also scored high (4) on English conversational proficiency. Comparison of these two children's scores on the English reading measures is illuminating in that one child (5 on Portuguese conversational proficiency, 4 on English) scored extremely highly in English reading (35 Vocabulary, 33 Comprehension) while the other child (4 in each language) was among the lowest scorers (11 Vocabulary, 16 Comprehension). This suggests that although there tends to be a general relationship between the development of conversational and literacy-related aspects of language proficiency at this level, good conversational skills in one or both languages is by no means a sufficient condition for commensurate levels of literacy development.

In view of the fact that a substantial number of Portuguese-background children appear to be at risk of school failure, it would appear appropriate to follow up the current research with an action research program that would involve parents, teachers and researchers in a collaborative process of intervention in both home and school designed to reverse the erosion of Portuguese language skills and promote conceptual and literate growth in both languages.

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# APPENDIX 1

## I) GUIDELINES USED IN SPECIFIC OVERALL EVALUATIONS:

### A) The overall evaluation of the "Tapings in the home"

This overall evaluation took into consideration the presence of one or more languages (English and/or Portuguese) and items in a very detailed scoring scheme covering both morpho-syntactic and pragmatic features (see Appendix 2 for scoring sheets and the test description for a definition of each item).

### B) Code switching

While observing patterns of code switching in the "Tapings in the home" various features were taken into consideration: 1) the communicative situation where code-switching occurred as well as the age, sex and status of the sender and/or receiver; 2) predominant language where the code-switch occurred; 3) the length of the code-switching fragment: a) single word, b) sentence and/or "C-unit", c) several "C-units", and d) any given segment of one or more words inside a given sentence or "C-unit". Also taken into account was 4) the nature of the code-switching segments, i.e., exclamatory or interjectional expressions, words commonly used in the "contact dialect" of the local Portuguese

community, as well as terms or discourse segments able to be associated with a specific social context and a specific language. When examine the code-switch patterns, we also took into account the fact that such linguistic phenomena occur frequently among bilinguals and does not necessarily mean a lack of linguistic skills.

C) Overall evaluation of the Portuguese and English samples of the "Oral Conversation"

The overall evaluation of the Portuguese and English samples of the "Oral Conversation" is based both on a detailed grammatical scoring (see Appendix 3) and on other cross-sentential features, such as discourse cohesion and coherence, as to allow us to determine on a 1 to 5 scale a given "level of proficiency". The latter is defined in the following manner: 1) amount of morpho-syntactical accuracy and sophistication, i.e., use of: (a) gender and agreement, (b) verb tenses and modals and (c) vocabulary range; 2) discourse cohesion and coherence , i.e., how well do interviewees manage to convey a given spoken massage, and 3) ease of communication, i.e., use of: (a) pauses and hesitations and (b) length of each answer.

F 01

1) Tapings in the home

a) Code Switching:

The child was taped at home. During taping she interacted with her parents who always spoke in Portuguese. The child, however, spoke English most of the time. Sometimes she used sentences in Portuguese containing English words, e.g., "daddy", "beach", "nice", and "candy". She used quite a number of sentences mixing both languages where Portuguese was required which might indicate that the child did not feel comfortable speaking Portuguese.

b) Overall evaluation:

overall score: 3

The child spoke mainly in English ( Eng. 84% , Port. 16%). Her sentences in English were longer and more sophisticated than in Portuguese. As far as grammar was concerned, she seemed to have some problems with word order, use of direct/indirect object pronouns and verb tenses in Portuguese. In English she showed a good range of verb tenses and her sentences seemed fairly coherent without pauses nor hesitations.

2) Conversation task (oral interview)

POR
overall score: 2

Although her discourse is quite coherent and her responses sometimes long and elaborate, this student has problems with the use of Portuguese articles, gender of common nouns and verb tenses. She rarely uses verbal modalities even in obligatory contexts, and, she often code-switches into English to convey meaning.

ENG
overall score: 4

Her answers in the English sample are long and quite elaborate, although at times, a number of pauses and hesitations stand in the way of a coherent response. She has a good vocabulary range and knows how to use verb tenses and modalities.

F03

1) Tapings in the home

a) Code switching:

The child was taped at home in the backyard while playing with other children. The mother spoke with her in Portuguese but the child seldom used this language since the other children always spoke in English. It should be noted that, when attempting to speak Portuguese with her mother, the child used a number of sentences in mixed code which might indicate the child did not feel comfortable speaking Portuguese.

b) Overall evaluation:

overall score: 3

The child spoke basically in English ( Eng. 97% , Port. 3%) and her sentences were longer and more sophisticated in English. As far as grammar was concerned, she had problems with omission and addition of words in the middle of sentences and lexicon. Her range of verb tenses was quite rich even though she made some mistakes. Her responses, nevertheless, were quite coherent and they did not reveal any pauses nor hesitations.

2) Conversation task (oral interview)

[not available]

M 04

1) Tapings in the home

a) Code switching:

The taping took place in the home. The target child was playing with an older sister while the mother was present. The predominant was Portuguese but English was mostly used among the children. Code switching from Portuguese into English occurred with words such as, "farm", "truck", and each time the target child got angry or used exclamatory expressions (e.g., "Come on!", "I want to stay here!"). The fact that the child did not use sentences mixing both languages, seemed to indicate that he felt comfortable speaking both languages.

b) Overall evaluation:

overall score:2

The child spoke both in English and Portuguese (Eng. 22% , Port. 78%). The sentences were longer and more elaborate in Portuguese; however, the child had problems using certain prepositions and conjugating some verbs in Portuguese. He did not make any mistakes concerning English grammar. Nevertheless, he had quite a number of inappropriate use of repetitions and "edit mazes" in English.

2) Conversation task (oral interview)

POR
overall score: 1

Although his responses in Portuguese are quite long, they are frequently off-topic and slightly incoherent. This student often code-switches into English to convey meaning and has problems with the use of Portuguese verb tenses and modalities. His vocabulary range in Portuguese is quite limited.

ENG
overall score: 3

His responses in English are sometimes off-topic and slightly incoherent. His vocabulary range is quite limited although the student does not show problems as far as verbal tenses are concerned. He shows some difficulty volunteering information which might account for the briefness of some of his answers.

F 05

1) Tapings in the home

a) Code switching:

The tapings took place in the home. During taping the child interacted with her mother who spoke generally in English. The child also spoke in English although sometimes, when addressed by the mother in Portuguese, the child would answer in the same language. Besides always using the word mother ("mae") in Portuguese, she did not use sentences in a mixed code.

b) Overall evaluation

overall score: 2

The child spoke mainly in English (Eng. 93% , Port. 7%). However, the sentences were longer and more sophisticated in Portuguese. As far as grammar is concerned she had problems in English word order, degree of adjectives and prepositions. She used an average range of verb tenses in English and she made some mistakes concerning verbal conjugations in both languages. Her responses were quite coherent, but she had a number of "edit mazes" in English as well as a number of non-specific uses of vocabulary.

2) Conversation task (oral interview)

POR
overall score: 3

She answers in a straightforward manner and her responses are quite coherent, however, they are quite short as she tries to avoid the use of verbal tenses and modalities. Nevertheless, she never code-switches into English to convey meaning and shows a good vocabulary range.

ENG
overall score: 4

She answers in a coherent manner and shows a good vocabulary range, however, her answers are quite short. She does not have problems using regular and irregular past tenses although she avoids the use of verbal modalities.

M 06

1) Tapings in the home

a) Code switching:

The taping started at home, but soon the parents decided to take the child to a hamburger place since the child was very upset with the fact that he was being taped. The target child interacted with his parents, a female adult and a friend around his age. With his parents he tended to use Portuguese, but would code switch to English whenever he felt particularly angry (e.g., "I don't go there!").

b) Overall evaluation:

overall score: 1

The child spoke mainly in English (Eng. 82% , Port. 18%). The sentences were longer in English than in Portuguese; however, he did not talk much since he was upset. In terms of verbs, there were mistakes in English and the range of verbal tenses tended to be quite limited in Portuguese. Due to the fact that he spent most of the time whining about being taped, there was not enough data to further illustrate the child's overall language proficiency.

2) Conversation task (oral interview)

POR
overall score: 3

This student answers using very short sentences and shows a limited vocabulary range. Although his answers are fairly coherent he has problems volunteering information, however, he can correctly use verb tenses and verbal modalities.

ENG
overall score: 3

His answers in English are coherent but very short, showing a very limited vocabulary range. The student has problems conveying information as well as conjugating basic verbs (e.g., "there <u>was</u> no buildings" and "there <u>was</u> a lot of people").

F 07

1) Tapings in the home

a) Code switching:

The target child was very nervous and hesitant about being taped. A slightly older brother tried to put her at ease by talking to her and playing a game. Nevertheless, she cried frequently and fell asleep in the middle of taping. The conversation was centered around her complaints about being taped. Although the target child spoke always in English with her brother, she spoke in Portuguese with her mother. In spite of the fact that her brother code-switched frequently, the target child rarely code switched. The only instance where it occurred was when she was speaking Portuguese with her mother (e.g., "I don't want you to see!"). Both her Portuguese and her English did not show grammatical interference.

b) Overall evaluation:

overall score: 4

The child spoke both in English and Portuguese (Eng. 30% , Port 70%) and her sentences were longer and more sophisticated in Portuguese. Her syntax in both languages was quite accurate although she made some mistakes in Portuguese concerning word order. Her range of verbal tenses was quite limited probably due

to the fact that she tried to avoid speaking; however, her responses were fairly coherent. She did not show any grammatical interference and her fluency in both languages seemed to be slightly above average.

2) Conversation task (oral interview)

POR
overall score: 3

Although her answers are fairly long, they are not always coherent. This student often code-switches into English to convey information. She can use verbal modalities but sometimes she has problems conjugating verbs in Portuguese (e.g., "eu e a minha irmã estava ao pé").

ENG
overall score: 5

Her answers in the English sample are quite long and coherent showing no long pauses nor hesitations. She also shows a correct usage of verb tenses and verbal modalities, a fairly good vocabulary range and a facility in organising long segments of information.

F 08

1) Tapings in the home

a) Code switching:

During the taping in the home the child spoke with her mother while helping her to prepare dinner. The conversation took place generally in English and seldom did they use any Portuguese words. This seemed to occur randomly and did not reveal any particular code switching pattern.

b) Overall evaluation

overall score: 2

The child spoke basically in English ( Eng. 96% , Port. 4%). The sentences were longer and more elaborate in English. Although the child exhibited a very good range of verb tenses in English, she made a few mistakes concerning verb tenses. Her sentences were coherent; however, she revealed a somewhat poor vocabulary range.

2) Conversation task (oral interview)

POR
overall score: 1

Her answers are very short as she shows some difficulty understanding the questions. She often code switches into English to convey meaning and frequently avoids the use of Portuguese verb tenses and modalities.

ENG
overall score: 2

Her answers are very short and vague. Although she does not show problems as far as verb tenses are concerned, her vocabulary range in English is quite limited (e.g., "we went to this thing").

F 09

1) Tapings in the home

a) Code switching:

This child was taped at home and in the front yard while playing with two other children. During taping, the child interacted with her parents and two other children; although she was addressed in Portuguese by her mother and one of the other children, she always spoke in English. Her father also spoke mainly in English.

b) Overall evaluation:

overall score: 2

While taped, the child spoke practically in English (Eng. 99% , Port. 1%); in fact, she only used ten words in Portuguese. Her sentences in English seemed to be fairly long; however, she had problems regarding word order, omission and addition of a word in the middle of a sentence, lexicon, prepositions and verbal conjugations. Her range of verb tenses, nevertheless, was quite varied. Although her speech seemed fairly coherent, she showed quite a number of pauses and hesitations.

2) Conversation task (oral interview)

POR
overall score: 1

This student shows a great difficulty expressing herself in Portuguese which might justify why she frequently code-switches into English or asks the interviewer to help her translate common verbs and nouns into Portuguese. She also has problems concerning the correct use of gender and the conjugation of verb tenses (e.g., "uma 'car'" and "eu não sabe").

ENG
overall score: 3

Her answers in English are long but, at times, incoherent, however, she shows no problems using verb tenses and verbal modalities. Her vocabulary range is quite limited.

F 11

1) Tapings in the home

a) Code switching:

The taping took place in the parents store, on the sidewalk outside the store and at home. During taping, she interacted with her parents, her little brother and her grandmother. With her father she always used Portuguese and, at times, she would code switch into English for words such as "mommy", "store", "poppy", "four wheels", and "mother's day". With her grandmother and her little brother she always used Portuguese; however, with her mother she used, at times, English. It should be pointed out that her father insisted that she speak Portuguese, but each time she got upset she switched into English. In some sentences where she was supposed to use Portuguese she mixed codes which might indicate she feels more comfortable speaking English. It should also be noted that when speaking to herself she would use both languages.

b) Overall evaluation:

overall score: 4

The child spoke both in Portuguese and English (Eng. 75% , Port. 25%) and the sentences where longer and more elaborate in Portuguese. As far as grammar was concerned, there were more mistakes in Portuguese, especially in verb conjugations and

omission and addition of words within sentences. The range of verb tenses was quite rich in both languages and her responses were generally very coherent. One should note, however, that she had five "edit mazes" in Portuguese which might indicate she feels more at ease speaking in English.

2) Conversation task (oral interview)

POR
overall score: 4

This student showed a certain ease speaking Portuguese; however, she had some problems with verb conjugations in Portuguese. She also used correct verbal modalities and her vocabulary range was above average.

ENG
overall score: 4

Her answers were quite long and coherent. Her vocabulary was above average and she seemed at ease speaking in English. She showed a good command of verb tenses and verbal modalities.

M 12

1) Tapings in the home

a) Code switching:

During the taping in the home the child did not speak much in spite of the fact that he interacted with his sister and his parents. While in the beginning of taping the child spoke Portuguese with both his parents and his sister, he soon started speaking English with his sister. The only instances of code switching from Portuguese into English occurred with words such as "juice" and exclamatory expressions such as "I don't know!". Also, when speaking and counting out loud he used English. Since he did not speak much, there was not enough data to properly assess his fluency in either language.

b) Overall evaluation:

overall score: 1

The child spoke mainly in Portuguese (Eng. 27% , Port. 73%) and his sentences were longer in Portuguese. He had some problems as far as verb tenses in Portuguese and revealed a somewhat limited vocabulary range.

2) Conversation task (ralinterview)

POR
overall score: 2

This student answers with very short sentences that are not always coherent. He has a great deal of difficulty not only conjugating verb tenses (e.g., he mixes present and past tenses). His vocabulary range in Portuguese is quite limited, however, he is familiar with the use of some verbal modalities.

ENG
overall score: 1

His answers were very short and reveal at times some Portuguese interference at a grammatical level. The fact that he uses a series of uncohesive short sentences, stands in the way of a receptor's coherence making, creating a specific situation where meaning is either, not at all conveyed, or bound to a series of cultural assumptions on the part of both the interviewer and the interviewee. The student can use the appropriate past tenses of irregular verbs, however, his vocabulary range is quite limited.

M 14

1) Tapings in the home

a) Code switching:

The taping took place at home. He interacted with his mother and older brother. With his mother he generally spoke in Portuguese. However, he spoke English with his brother and also when talking to himself. Code switching occurred mainly when he spoke Portuguese in the form of single words (e.g. "building", "nice", "truck" and "Grade 1") and sometimes in the middle of sentences. He also code switched into English each time he used exclamatory expressions (e.g., "See!"). The patterns of code switching tell us that he feels more at ease speaking in English.

b) Overall evaluation:

overall score: 3

The child spoke both languages (Eng. 48% , Port. 52%). However his sentences were longer and more sophisticated in English than in Portuguese. As far as grammar was concerned he made far more mistakes in Portuguese than in English, especially in word order, degree of adjectives, lexicon and prepositions. He exhibited a wide range of verb tenses in both languages. It should be pointed out, however, that he made quite a number of mistakes in both languages because he used a lot of verbs and he

spoke a lot. He did not have a great number of pauses and hesitations but he exhibited some "edit mazes" in both languages.

2) Conversation task (oral interview)

POR
overall score: 3

His answers in Portuguese are lengthy and fairly coherent, however, the student has some difficulty conjugating the verb tenses (e.g., "a minha mãe e o meu irmão trabalha"). He also shows some difficulty concerning the gender of nouns and adjectives, and uses certain verbal constructions that reveal some English interference used in Latin "contact dialects" (e.g., "vim para trás").

ENG
overall score: 4

His answers in English are quite lengthy and very coherent. He does not have a very wide vocabulary range, nonetheless, his responses reveal a knowledge of English irregular past tenses and verbal modalities.

F 15

1) Tapings in the home

a) Code switching:

The child was taped at home. While taping she spoke with her parents about everyday events. Although the parents spoke always in Portuguese, the child, at times, addressed them in English, especially when talking about school related activities. While speaking Portuguese she often used exclamatory expressions in English such as "You know..." and "I don't know!". Sentences with mixed code were not very frequent.

b) Overall evaluation:

overall score: 4

During taping the child spoke both languages (Eng. 20% , Port. 80%). Her sentences were longer and quite sophisticated in Portuguese although the English ones were also quite good. Her responses were very coherent. However, she showed some problems with direct/indirect object pronouns and/or reflexive particles in Portuguese. Her range of verb tenses in both languages was quite good, but she seemed more fluent in English since in Portuguese she had about ten "edit mazes".

2) Conversation task (oral interview)

POR
overall score: 5

She shows a good vocabulary usage and her answers are quite long and elaborate. As far as coherence is concerned, her discourse skills are quite satisfactory. She has a certain ease of communication about her, shows very little interference and exhibits a good use of prepositions and verb tenses. She also knows how to use the appropriate verbal modalities.

ENG
overall score: 4

This student shows ease of communication and answers is a straightforward manner. At times she has same problems with the use of prepositions (e.g., "they show girls <u>in the</u> T.V." and "I live <u>in</u> 102 Landsdown"). These might be due to interference from Portuguese. She does not seem to have any problems with the use of verb tenses and seems to have mastered the use of modalities (e.g., "probably buy a car" and "we could go to Portugal").

F 17

1) Tapings in the home

a) Code switching:

The taping took place at home. The child interacted with her mother, her brother and several neighbours. The child spoke mainly in Portuguese. Code switching occurred both ways between the mother and the target child not only in the form of sentence segments, but also in the form of short sentences and words that had an exclamatory function (e.g. "that's O.K.!", "Good...", "I promised!", etc...

b) Overall evaluation:

overall score: 2

The child used both languages (Eng. 23% , Port.77%) but the sentences were slightly longer in Portuguese. Her responses were not always very coherent and tended to be short and sometimes in mixed code. However, she does not exhibit any major problems regarding Portuguese or English syntax.

2) Conversation task (oral interview)

POR
overall score: 1

Her answers in Portuguese were usually short and off-topic showing a lack of coherence due to a strong interference from English at both vocabulary and grammatical levels. Her sample also shows quite a number of gender and number mistakes concerning nouns used in everyday language.

ENG
overall score: 2

Although she shows some ease of communication and her answers are longer than in the Portuguese sample, her coherence is very poor. At times she uses the wrong verb tenses (e.g., "yesterday we <u>have</u> to jump"). She shows problems with the use of adverbs (e.g., "she scratches me so much times") and uses some ambiguous sentences (e.g., "she is too small already" and "buy a T.V. for their own self"). She also has problems with the use of prepositions (e.g., "we went <u>in</u> ponies"). Although she has not used verbal modalities, she manages, sometimes, to communicate the meaning.

M 18

1) Tapings in the home

a) Code switching:

The child was taped at home. During taping he interacted with his mother and his aunt. The mother always spoke in Portuguese, but the aunt spoke both in Portuguese and in English. The child spoke both languages although it did not seem to be a specific pattern triggering such a code switch.

b) Overall evaluation:

overall score: 3

The child used both languages (Eng. 79%, Port. 21%). Although his sentences are slightly longer and more sophisticated in Portuguese, his sentences in English were also good. His grammar seemed to be good in both languages probably due to the fact that his oral production was quite basic. His responses were fairly coherent, however he exhibited some problems related to inappropriate use of repetitions.

2) Conversation task (oral interview)

[not available]

F 19

1) Tapings in the home

a) Code switching:

The taping took place at home. The target child was at first with her father helping him to prepare a meal; later, the mother arrived and they all had dinner. The conversation revolved around everyday events. The child spoke with her father in Portuguese and both used certain words in English such as "daddy", "dad", "mommy" and "farm". With her mother, the child used mainly English except when referring to the meal itself. At one point the child was playing alone and talking to herself in English since she was referring to school activities. The child also switched when using certain expressions that had an interjective quality (e.g., "Jesus!" and "I know!"), yet, she rarely used sentences that were in mixed code which demonstrates that the child must have a fair command of both English and Portuguese.

b) Overall evaluation:

overall score: 5

The child used both languages (Eng. 23% , Port.77%) but her sentences were longer and more sophisticated in Portuguese. Although the child had several problems using the appropriate degree of adjectives in Portuguese, she, nevertheless, exhibited a good command of grammar in both languages including a large

range of verb tenses. Her responses were always appropriate and coherent although at times there were pauses and hesitations when she spoke in Portuguese.

2) Conversation task (oral conversation)

[not available]

M 20

1) Tapings in the home

a) Code switching:

The child was taped at home. During taping he interacted with his parents who always addressed him in Portuguese. The child tried to speak Portuguese, but he switched to English when explaining how to play a game. While speaking in Portuguese he used some exclamatory sentences in English (e.g., "I did it!", "Well..." and "Don't push me!") as well as certain words such as "mommy" and "daddy". He seldom used sentences with mixed code and always used English when speaking to himself.

b) Overall evaluation:

overall score: 3

The child used both languages (Eng. 48% , Port. 52%) but his sentences were longer and more sophisticated in English. As far as grammar was concerned, he had some problems in Portuguese, especially in word order, lexicon and prepositions. His range of verb tenses was average in both languages although he made more mistakes in Portuguese. His responses were coherent and did not show pauses nor hesitations in both languages.

2) Conversation task (oral interview)

POR
overall scoring: 9

Note: The Portuguese interview is missing from the sample.

ENG
overall scoring: 3

His answers are very short and not always very coherent, revealing a great amount of pauses and hesitations, however, the student knows how to use the appropriate verb tenses.

M 22

1) Tapings in the home

a) Code switching:

During taping the target child was in the home playing, watching T.V. and speaking with his mother about everyday events such as things that happened at school. Although the mother spoke in Portuguese, the child always answered in English which led the mother into frequent code switching. The child, however,code-switched rarely, only when referring to mother (addressed as "mae") and when saying "no" (Port. "nao").

b) Overall evaluation:

overall score: 3

The child spoke basically in English (Eng. 99% , Port. 1%) and his sentences were quite long and coherent. He showed an average range of verb tenses although the present tense seemed to predominate. This child seemed to have a good usage of English syntax even though he made some mistakes using irregular past tenses. There seemed to be no problems as far as interference was concerned as his responses were always appropriate.

2) Conversation task (oral conversation)

[not available]

M 23

1) Tapings in the home

a) Code switching:

The taping took place at home. The target child was playing with his sister and the mother was present. The conversation evolved around various games and school activities. The child spoke always Portuguese with his mother and English with his sister. Code switching rarely occurred be it inside an English or Portuguese segment, with the exception of words like "grand-mother", "mommy", "daddy" and "show" the child used when speaking Portuguese to his mother. The child seemed to be at ease speaking both languages.

2) Overall evaluation:

overall score: 3

The child spoke both in English and Portuguese (Eng. 50% , Port. 50%) but his sentences were longer in Portuguese. Although the child felt at ease speaking Portuguese, he had problems using the appropriate prepositions and verb conjugations, as well as the right gender in Portuguese. On the other hand, his English seemed to be more accurate although the number of obligatory contexts for finite verbs in Portuguese was double the English, he managed to increase by 15 times the number of mistakes in

Portuguese. His responses were always coherent; however, in Portuguese there was a greater number of pauses and hesitations than in English.

F 24

1)Tapings in the home

a) Code switching:

The taping took place at home. The target child interacted with both parents, her grandmother and two other adults. Code switching rarely occurred since she spoke mainly in Portuguese. During taping she was basically uncooperative and ill at ease. In spite of the fact that she was coaxed by every one, she did not say much.

b) Overall evaluation:

overall score: 1

The child used mainly Portuguese (Eng. 12% , Port. 88%). Her sentences in both Portuguese and English were very short. In Portuguese they consisted mainly of two words "Nao quero" (I don't want it); however, she exhibited a number of problems concerning word order and use of lexicon in Portuguese. The range of verb tenses was extremely limited probably due to the fact that she did not say much, besides the aforementioned sentence.

2) Conversation task (oral interview)

POR
overall scoring: 2

Her answers in Portuguese are sometimes lengthy but very incoherent since the student keeps introducing others instead of keeping to a main one. The student also reveals some problems conjugating and using the appropriate verb tenses, however, she is familiar with the use of some verbal modalities.

ENG
overall score: 2

Her answers in English are extremely short and evasive. This, might be due, in part, to the fact that the student is very shy. Sometimes she has problems conjugating verb tenses and using adjectives that, in Portuguese, have to agree in gender and number (e.g., "there was bigs cows").

F 25

1) Tapings in the home

a) Code switching:

The child was taped at home. During taping she interacted with her mother and her older sister. The sister spoke always in English. Her mother started speaking in Portuguese but soon switched to English, since both girls tended to speak in this language. The target child did not use any Portuguese words when speaking in English nor did she use sentences in mixed code.

b) Overall evaluation:

overall score: 3

The child spoke basically in English (Eng. 91% , Port. 9%). Her sentences were longer and more sophisticated in English. As far as grammar was concerned she only showed some problems in omission and addition of words in the middle of sentences and in prepositions. Her range of verb tenses was average and she made some grammatical mistakes in both languages. Her sentences were fairly coherent although she had some "edit mazes" in English.

2) Conversation task (oral interview)

POR
overall score: 2

This student uses fairly coherent lengthy sentences but has a great amount of difficulty conjugating verb tenses, as well as using the appropriate prepositions and articles (e.g., "Eu pode ir para o Portugal").

ENG
overall score: 4

Her answers in English are straightforward and very coherent, although not very lengthy. The student has a good vocabulary range and has no problems regarding the usage of English syntax and morphology.

## II) OVERVIEW OF CODE SWITCHING PATTERNS

According to the samples, none of the students spoke a mixture of Portuguese and English. The vocabulary items mostly used in English when talking in Portuguese were: "daddy", "mommy", "nice", "juice", "building", "store", "truck", "farm" and "candy". These seem to be items that have been borrowed from English and have become part of the Portuguese "contact dialect" in Toronto.

The students tended to code-switch when using exclamatory expressions and when they got angry. Code-switching also occurred when talking about school-related activities or specific social contexts associated with a particular language. It should be pointed out, however, that whenever a student talked to him/herself, he/she used English. There was only one student who used both languages while talking to herself.

## III) PROBLEMS ENCOUNTERED IN THE "TAPINGS IN THE HOME" AND "CONVERSATION TASK"

According to the samples analysed in Portuguese, the most common problem surfaced in the area of use of appropriate verb tenses and simple verb conjugations. Other areas of concern were gender of nouns and the limited vocabulary used by the students.

Since most students felt more at ease speaking in English than in Portuguese, the problems were somewhat different. Accordingly, the area with a higher incidence of problems was the one dealing with vocabulary. There were also some problems with the use of prepositions and verbs, especially past tenses of irregular verbs.

APPENDIX 2

TAPINGS IN THE HOME

Name of child: _____, Sex:_____, Age:_____

Transcriber:_____, Scorer:_____, Date:_____

Notes:_____

1. Percentage of English and Portuguese

Total no. of words in English: _____

Total no. of words in Portuguese: _____

Total no. of words:_____

Percentage of English:_____

Percentage of Portuguese:_____

2. Syntactic sophistication

No. of C-units in English:_____

Average word per C-unit in English: _____

No. of C-units in Portuguese:_____

Average word per C-unit in Portuguese:_____

No. of C-units in mixed code:_____

Average word per C-unit with mixed code:_____

3. Grammar

a) word order

Total no. of mistakes in English:_____

Total no. of mistakes in Portuguese:_____

Total no. of mistakes in Portuguese concerning the use of direct/ind. obj. pronouns and/or reflexive particles:_____

b) degree of adjectives

Total no. of mistakes in English: _____

No. of obligatory contexts requiring its usage in English: _____

Total no. of mistakes in Portuguese: _____

No. of obligatory contexts requiring its usage in Portuguese: _____

c) omission, addition *

Total no. of mistakes in English: _____

Total no. of mistakes in Portuguese: _____

Specify language and type of mistake:

_____

_____

d) lexicon (related to the use of verbs)

Total no. of mistakes in English: _____

Total no. of mistakes in Portuguese: _____

List all the above: _____

_____

_____

e) prepositions and prepositional locutions

Total no. of mistakes in English: _____

No. of obligatory contexts for their use in English: _____

(*) of words that do not fall into the other categories of this scoring scheme.

Total no. of mistakes in Portuguese: _____

No. of obligatory contexts for their use in Portuguese

including "a":_____

excluding "a":_____

Range of correctly used prepositions in English: _____

Range of correctly used prepositions in Portuguese:

including "a":_____

excluding "a":_____

List range for both English and Portuguese:

_____

_____

_____

f) verbs

Total no. of mistakes in English:_____

Total no. of obligatory contexts for finite verbs in English:_____

No. of regular verbs in English:_____

No. of irregular verbs in English:

including "TO BE":_____

excluding "TO BE":_____

Total no. of mistakes in Portuguese: _____

Total no. of obligatory contexts for finite verbs in Portuguese:

_____

No. of Portuguese verbs of the 1rst conjugation:_____

No. of Portuguese verbs of the 2nd conjugation:_____

No. of Portuguese verbs of the 3rd conjugation:_____

No. of irregular verbs in Portuguese:

including SER/ESTAR:_____

excluding SER/ESTAR:_____

List range of tenses and no. of occurences:

English

_____, No. _____

_____, No. _____

_____, No. _____

_____, No. _____

_____, No. _____

_____, No. _____

_____, No. _____

_____, No. _____

_____, No. _____

_____, No. _____

_____, No. _____

Portuguese

_____, No. _____

_____, No. _____

_____, No. _____

_____, No. _____

_____, No. _____

_____, No. _____

_____, no. _____

_____, No. _____

_____, No. _____

_____, No. _____

g) interference

Total no. of lusisms in English:_____

List:_____

_____

_____

_____

Total no. of anglicisms in Portuguese: _____

List: _____

_____

_____

_____

4. Pragmatics

Total no. of nonfluencies in an English context: _____

a) no. of audible/silent pauses: _____

b) no. of inappropriate use of repetitions: _____

c) no. of non-native-like use of filler words or phrases: _____

d) number of edit mazes: _____

Total no. of nonfluencies in a Portuguese context: _____

a) _____

b) _____

c) _____

d) _____

Total no. of nonfluencies in a mixed context: _____

a) _____

b) _____

c) _____

d) _____

Total no. of inappropriate or off-topic responses:

a) in an English context: _____

b) in a Portuguese context: _____

c) in a mixed context: _____

Total no. of Nonspecific use of vocabulary:

a) in English _____

b) in Portuguese _____

Total no. of Inappropriate use of anaphora or cataphora:

a) in an English context _____

b) in a Portuguese context _____

c) in a mixed context_____

# APPENDIX 3

CONVERSATION TASK _____

_____

ENGLISH _____ PORTUGUESE _____

NAME OF STUDENT: _____

NAME OF SCORER: _____

DATE: _____

MAIN QUESTIONS:

1. No. of errors _____

   No. of obl. cont. _____

2. No. of errors _____

   No. of obl. cont. _____

3. No. of errors _____

   No. of finite clauses _____

   No. of indeter. const. _____

4. No. of errors _____

   No. of obl. cont. _____

Overall proficiency in the target language _____

APPENDIX 4

## QUESTIONNAIRE

### Responses Compiled as a Whole

**A) BACKGROUND:**

**Child**

Sex: -female (12) male (8)

Birthdate: all born in 1980

Jan. - Apr. (10)

May - Aug. (7)

Sept - Dec. (3)

Birthplace: -Canada (19) -City(19) Toronto(18), North York (1)

-Portugal(1)

**Age on Arrival:** -N/A(19).

-1 at 14 mos.

**Exposure to languages other than Eng. & Port.:**

-no(18) yes(2) -French on TV

-Spanish on TV)

Relatives living at home:

-Mother (1) Both parents(19)

-Siblings Yes(16) No (4)

is only child (4)

is oldest child (6)

has younger siblings (7)

has older siblings under 12 (6)

has teen & older siblings (4)

-Grandparents/relatives Yes(4) No(15)

-both grandparents & an aunt/uncle(2)

-both grandparents (1)

-grandmother (1)

-adult cousin (1)

-Other:

-1 previously had Portuguese tenants

**Father**

Deceased:(1)

Birthplace: Mainland Portugal (11)

Rural Mainland (5)

Mainland Towns/Cities (6)

6 provinces in Mainland (Estremadura -6-, Tras-Os Montes -1-, Beira Baixa - 1, Algarve -1, Alentejo -1, Santarem -1)

Azores (8)

Rural Azores (5)

Azorian Towns/Cities (3)

4 islands (Sao Miguel -5, Terceira -1, Sao Jorge -1, Santa Maria -1)

Schooling: elementary(17)

secondary(2)

Employed: yes(18) no(1)

Employment (Type): Self-employed (3)

Skilled Labour (7)

Unskilled Labour (4)

Unemployed (1)

Supervisory capacity: yes(6) no(13)

Mother Tongue: Portuguese (19)

Length in Canada: 0 to 5 years (1)

6 to 10 years (5) — 0 to 10 years (6)

11 to 15 years (8)

16 to 20 (3) — 11 to 20 years (12)

Speaks English, yes (13) no() Some(4)

attends/ed ESL classes Yes(8) No (1)

Schooling in Canada Yes(2)

**Mother:**

Birthplace Mainland Portugal (12)

Rural Mainland (6)

Towns/Cities Mainland (6)

6 provinces in Mainland (Estremadura -6, Beira Baixa -1,

Beira Alta -1, Algarve -1, Beira Litoral -1, Santarem -1)

Azores(8)

Rural Azores (3)

Towns/Cities (5)

4 islands (Sao Miguel -4, Terceira -2, Santa Maria -1, Sao Jorge -1)

Schooling elementary(14)

secondary (5)

post secondary (1)

**Employed** yes(17) no(3)

**Employment** Housewife (2)

Dress Designer (1)

Clerical (2)

Seamstress (3)

Cleaning (3)

Factory (4)

Childcare (1)

Small Business (2)

Supervisor (1)

Supervisory capacity yes(3) no(17)

Mother Tongue Portuguese(20)

Speaks English yes(11) no (5) some(1)

Attended ESL classes yes (3) no()

Had schooling in Canada yes (5) no(15)

Length in Canada

0 to 5 years (1)

6 to 10 (5)

11 to 15 (8)

16 to 20 (4)

over 20 years(2)

0 to 10 years (6)

11 to 20 years(14)

**B) LANGUAGE USE:**

**Childcare Background:**

Nursery School yes (10) no (10)

How Long:

-5 mos.

2 1/2 years--2 1/2 to 5 years of age(2)

2 years --3 to 5 years of age(2)

3 years --2 to 5 years of age (2)

1 year --4 to 5 Years of age

1 year --3 1/2 to 5 years of age

2 1/2 years --2 to 4 1/2 years of age

Frequency: -5 days a week (10)

Language of Teacher: -English (10)

language of Other Children: -English (10)

Babysitter yes (10) no ( 10

How Long:

9 mos --2 to 3 years of age

. year --1 to 2 years of age

1 1/2 years --10 mos to 2 1/2 yrs

1 1/2 years --1 to 2 1/2 years of age

2 years --4 mos. to 2 1/2 years

2 1/2 years --1 to 3 1/2

2 1/2 years --2 1/2 to 3 years of age

4 years --birth to 4 years of age

4 years --1 to 5 years of age

5 years --4 mos. to 5 years

Frequency:- 5 days a week (3)

4 days a week (1)

Language of Sitter: -Portuguese (3)

50% Eng., 50% Portr. (1)

Number of Children.- none (3)

one (3)

four (1)

five (3)

Language of Other Children: **N/A (3)**

**Portuguese (5)**

**Prt & Eng. (1)**

**Eng. (1)**

**Home Language Use:**

| | Portuguese | English |
|---|---|---|
| Child to Father | **N/A** | |
| | 100% (3) | |
| | 95% | 5% (1) |
| | 90% | 10% (3) |
| | 80% | 20% |
| | 85% | 15% (2) |
| | 50% | 50% (5) |
| | 75% | 25% |
| | 25% | 75% |
| | 5% | 95%(2) |
| Child to Mother | | |
| | 100% (4) | |
| | 95% | 5% |
| | 90% | 10% (2) |
| | 80% | 20% |
| | 75% | 25% |
| | 50% | 50% (3) |
| | 40% | 60% |
| | 20% | 80% |

| | | |
|---|---|---|
| | 15% | 85% |
| | 10% | 90% |
| | | 100%(4).. |
| Child to Grandfather | N/A(13) | |
| | 100% | |
| | 80% | 20% |
| | 25% | 75% |
| | 20% | 80% |
| | 5% | 95% |
| | | 100% (2) |
| Child to Grandmother | N/A(12) | |
| | 100% (4) | |
| | 80% | 20% |
| | 25% | 75% |
| | 20% | 80% |
| | | 100% |
| Child to Other Relatives(Adults) | | |
| | N/A(4) | |
| | 100% (8) | |
| | 90% | 10% |
| | 80% | 10% |
| | 50% | 50% (2) |
| | 20% | 80% |
| | | 100% (3) |
| Child to Other Relatives (Children) | | |
| | N/A(3) | |
| | 50% | 50% (4) |
| | | 100%(13) |

| | Portuguese | English |
|---|---|---|
| Child to non-relatives (Adult) | | |
| | 100% (7) | |
| | 90% | 10% |
| | 80% | 20% |
| | 50% | 50%(4) |
| | | 100% (7) |

Child to non-relative children mostly English except for one who does not yet speak English well.(In some cases the 50%/50% was interpreted by the parents as 50% Portuguese with the adults & 50% English with the children)

| | | |
|---|---|---|
| Child to younger siblings | N/A (13) | |
| | 100% | |
| | 25% | 75% |
| | | 100% (5) |
| Child to older siblings | N/A(10) | |
| | 80% | 20% |
| | 25% | 75% |
| | 20% | 80% |
| | 10% | 90% |
| | 5% | 95% |
| | | 100% (5) |
| Father to Child | N/A | |
| | 100%(11) | |
| | 95% | 5% |
| | 90% | 10% |
| | 85% | 15% |
| | 80% | 20% |
| | 70% | 30% |

| | Portuguese | English |
|---|---|---|
| | 60% | 40% |
| | 50% | 50%(2) |
| Mother to Child | 100% (11) | |
| | 90% | 10% |
| | 80% | 20% |
| | 75% | 25% |
| | 70% | 30% |
| | 50% | 50% |
| | 25% | 75%(3) |
| | | 100% |
| Grandfather to Child | N/A(13) | |
| | 100% (4) | |
| | 95% | 5%(2) |
| | 75% Port. 25% Eng | |
| Grandmother to Child | N/A(12) | |
| | 100%(7) | |
| | 95% | 5%(2) |
| Other Relatives to Child(adults) | | |
| | N/A (3) | |
| | 100%(9) | |
| | 95% | 5% |
| | 90% | 10% |
| | 50% | 50%(4) |
| | | 100%(2) |

| | Portuguese | English |
|---|---|---|
| Other Relatives to Child (children) | | |
| | N/A(3) | |
| | 100% | |
| | 90% | 10% |
| | 50% | 50%(4) |
| | | 100%(11) |
| non-relatives to Child (Adults) | | |
| | 100% (7) | |
| | 85% | 15% |
| | 80% | 20% |
| | 75% | 25% |
| | 50 % | 50% (5) |
| | 25% | 75% |
| | 20% | 80% |
| | | 100%(3) |
| Younger siblings to child | N/A(18) | |
| | 20% | 80% |
| | | 100% |

(Of the seven families with younger siblings five of the younger siblings were under 2 years of age so the question was inapplicable)

| | | |
|---|---|---|
| Older siblings to Child | N/A(10) | |
| | 100% | |
| | 50% | 50% |
| | 15% | 85% |
| | 10% | 90% |
| | | 100%(6) |

Other languages child knows none (20)

| | Portuguese | English |
|---|---|---|
| **Mother & Father Language Interaction** | | |
| | N/A | |
| | 100%(14) | |
| | 90% | 10% |
| | 80% | 20% |
| | 50% | 50%(3) |
| **Other Adults Language Interaction** | | |
| | 100% (16) | |
| | 90% | 10% |
| | 80% | 20% |
| | 50% | 50% |
| **Television:** | | |
| **Hours of English TV per week** | 2 Hours | 2 1/2 Hours |
| | 3 Hours (2) | 4 Hours |
| | 6 Hours | 7 Hours |
| | 9 Hours | 10 Hours |
| | 12 Hours | 15 Hours |
| | 16 Hours | 20 Hours (4) |
| | 25 Hours (3) | 30 Hours |
| **Hours of Port. TV per week** | 0 Hours (9) | 1 Hour (4) |
| | 2 Hours (4) | 2 1/2 Hours |
| | 3 Hours | 7 Hours |

**C) Reading Habits:**

Reads books/magazines:

Often(12)

Sometimes(5)

Rarely (2)

Never(1)

Language of reading material:

| Portuguese | English |
|---|---|
| N/A | |
| 100% | |
| 75% | 25%(2) |
| 50% | 50% (2) |
| 25% | 75% |
| 20% | 80%(2) |
| 10% | 90% |
| 5% | 95% |
| | 100%(9) |

Listens to stories/tales:

Often(7)

Sometimes(11)

Rarely (2)

Never()

Language of stories/tales

| Portuguese | English |
|---|---|
| 100%(10) | |
| 50% | 50% |
| 20% | 80%(2) |
| | 100%(6) |

Stories/Tales are:

Read (6)

Told (9)

Read & Told (5)

Who reads or story tells:

mother (10)

father(5)

mother & father(1)

mother & father & others (1)

other: siblings(2), grandmother (1)

PRESCHOOL YEARS:

Read:

| | |
|---|---|
| some letters: | yes (13) no(7) |
| all letter: | yes (2) no(18) |
| his/her name | yes (11) no(9) |
| familiar words | yes(1) no(19) |
| words in books | yes() no(20) |
| sentences in books | yes() no(20) |

Looked at books alone:

several times a day (6)

once a day (3)

several times a week (6)

several times a month (1)

rarely or never (4)

Looked at books with an adult:

several times a day (2)

once a day(4)

several times a week(7)

several times a month(4)

rarely or never(3)

sister

D)

**PARENTAL EXPECTATIONS:**

Parent wants child to:

| | |
|---|---|
| understand and speak Portuguese | yes(20) no() |
| read and write Portuguese | yes(20) no() |

Parent thinks child will

| | |
|---|---|
| understand and speak Portuguese | yes(20) no() |
| read and write Portuguese | yes(20) no() |
| read & write Portuguese as well as English | yes(5) no(11) doesn't know(4) |

## E) General Questions:

Who was present at the interview:

both present, shared dialogue (2)

both present, mother more outspoken (4)

both present, father more outspoken (4)

both parents present and one or more grandparents (2)

mother present, father working (7)

mother present, father deceased (1)

both present (12)

mother alone (8)

Why want child to speak Portuguese:

better to know more than one language 11

important forfamily reasons (to speak to grandparents etc.) 9

reasons of background (roots) 6

opens opportunities of knowledge & employment 5

parents may return to Portugal permanently 6

knowledge of Portuguese will facilitate learning of other languages 1

one or both parents don't speak any English so necessary for communication 2

Canada's a country of many languages & there's a role for Portuguese 1

benefits child's personal and academic background 2

parents return to Portugal regularly for vacation. Portuguese makes trips more enjoyable for child and everyone 3

easier to learn a language as a child 1

knowledge of Portuguese will facilitate learning of other languages 1

Degree of fluency expect child to attain:

expect full fluency in both 5

(why continued prolonged visits to Portugal should do it/ may be motivated like aunts to pursue post secondary studies in Portuguese/ plans to permanently return to Portugal in the not too distant future/ plans to enrolchild in intense after school programs along with heritage language program at school)

don't expect fluency at level of English 11

(why: logical since child has a lot more exposure to English / number of schhooling hours in Portuguese is minimal in comparison) But do expect child to communicate effectively if he/she wants to. Some expressed that they would encourage them to learn, but know of cases where the children rejected learning, not sure what they would do in that case.)

Parents, who are fluent and literate in English, expressed concern at being able to maintain the language given that, the children speak English among themselves and parents plug into the English. This is particularly the case, where the parents not only speak English but have more than one child. It was easy to maintain Portuguese as the language of the home when there was only one child, but with more then one child the language of the home quickly becomes English. Many would like some suggestions as to positive ways in which they can encourage the use of Portuguese, didn't really want to become authoritarian and impose the language or make parental & sibling communication a language issue.

Attitudes to Heritage Language Programs:

in favour of integrated 19 (1 not included in notes)

against after school 3 (reason: distance from home and time factor disrupts family life/schedule)

6 (students too young for after school--too long a day)

in favour of after school 6 (plan to enrol child in after school program to supplement the 25 min. integrated program)

1 (already enrolled)

How plan to maintain and develop the child's Portuguese language skills:

frequent Summer trips to Portugal 6

continuing in Heritage language integrated program 19

emphasizing Portuguese in the home 8

having child study in Portugal when older 1

maintaining regular contact with Portuguese speaking relatives, here thru regular visits, overseas by mail, phone & trips 7

when they get a bit older will enrol them in after school program because 25 min. is not enough 10

encourage more time in integrated program if it became possible 1

# APPENDIX 5

## Means, Standard Deviations, and Intercorrelations for All Variables

| Variable | Mean | Std Dev | Minimum | Maximum | Valid N | Label |
|---|---|---|---|---|---|---|
| @SRJPEXT | 19.544 | 18.214 | .00 | 69.05 | 24 | SENT REP JK PORT EXACT REPETITION % |
| @SRJPMKT | 27.282 | 21.249 | .00 | 83.33 | 24 | SENT REP JK PORT MEANING KEPT % |
| @SRSPEXT | 23.935 | 23.710 | .00 | 73.81 | 19 | SENT REP SK PORT EXACT REPETITION % |
| @SRSPMKT | 32.581 | 26.938 | .00 | 83.33 | 19 | SENT REP SK PORT MEANING KEPT % |
| @SR1PEXT | 40.064 | 19.962 | 7.14 | 73.81 | 14 | SENT REP G1 PORT EXACT REPETITION % |
| @SR1PMKT | 54.171 | 21.220 | 11.90 | 85.71 | 14 | SENT REP G1 PORT MEANING KEPT % |
| CONJPR | 10.875 | 3.651 | 0 | 15 | 24 | CONCEPTS ABOUT PRINT, JK, PORT RAW |
| CONSPR | 12.895 | 2.923 | 7 | 17 | 19 | CONCEPTS ABOUT PRINT, SK, PORT RAW |
| CON1PR | 18.357 | 2.530 | 14 | 24 | 14 | CONCEPTS ABOUT PRINT, 1K, PORT RAW |
| ALFJP | 5.792 | 4.890 | 0 | 14 | 24 | ALPHABET: JK, PORT |
| ALFSP | 7.211 | 3.924 | 0 | 13 | 19 | ALPHABET: SK, PORT |
| ALF1P | 43.286 | 18.428 | 0 | 54 | 14 | ALPHABET: G1, PORT |
| PREJP | 2.357 | 1.216 | 1 | 5 | 14 | LANGUAGE PROFICIENCY, G1, PORT |
| WORDPORT | 54.550 | 33.980 | .00 | 100.00 | 14 | WORDS/5 MIN G1 PORT CORRECT % TOTAL |
| @SRJEEXT | 30.060 | 21.432 | .00 | 80.95 | 24 | SENT REP JK ENGL EXACT REPETITION % |
| @SRJEMKT | 34.921 | 24.257 | .00 | 88.10 | 24 | SENT REP JK ENGL MEANING KEPT % |
| @SRSEEXT | 45.990 | 20.666 | .00 | 83.33 | 19 | SENT REP SK ENGL EXACT REPETITION % |
| @SRSEMKT | 53.133 | 23.916 | .00 | 95.24 | 19 | SENT REP SK ENGL MEANING KEPT % |
| @SR1EEXT | 69.048 | 19.280 | 17.05 | 88.10 | 15 | SENT REP G1 ENGL EXACT REPETITION % |
| @SR1EMKT | 77.778 | 18.545 | 24.19 | 95.24 | 15 | SENT REP G1 ENGL MEANING KEPT % |
| CONJER | 4.708 | 2.710 | 0 | 11 | 24 | CONCEPTS ABOUT PRINT, JK, ENGL RAW |
| CONSER | 10.263 | 3.088 | 4 | 16 | 19 | CONCEPTS ABOUT PRINT, SK, ENGL RAW |
| CON1ER | 16.933 | 3.219 | 10 | 22 | 15 | CONCEPTS ABOUT PRINT, 1K, ENGL RAW |
| ALFJE | 22.042 | 17.374 | 0 | 50 | 24 | ALPHABET: JK, ENGL |
| ALFSE | 34.474 | 15.536 | 1 | 53 | 19 | ALPHABET: SK, ENGL |
| ALF1E | 48.600 | 10.453 | 12 | 54 | 15 | ALPHABET: G1, ENGL |
| PREJE | 3.200 | 1.082 | 1 | 5 | 15 | LANGUAGE PROFICIENCY, G1, ENGL |
| WORDENGL | 70.243 | 17.575 | 33.33 | 100.00 | 15 | WORDS/5 MIN G1 ENGL CORRECT % TOTAL |
| VOCTER | 20.071 | 7.937 | 9 | 35 | 14 | GATES-MCG VOCAB, G1, ENGL, RAW |
| CMP1ER | 19.071 | 8.801 | 5 | 37 | 14 | GATES-MCG COMPREH, G1, ENGL, RAW |
| DAPJ | 1.913 | 1.164 | 1 | 5 | 23 | DRAW A PERSON, JK |
| DAPS | 1.737 | 1.195 | 1 | 5 | 19 | DRAW A PERSON, SK |
| DAP1 | 2.667 | 1.234 | 1 | 5 | 15 | DRAW A PERSON, G1 |
| ORALRATE | 2.700 | 1.081 | 1 | 5 | 20 | oral rating overall |

## PEARSON CORRELATION COEFFICIENTS

| | @SRJPEXT | @SRJPMKT | @SRSPEXT | @SRSPMKT | @SR1PEXT | @SR1PMKT | CONJPR | CONSPR | CON1PR | ALFJP | ALFSP |
|---|---|---|---|---|---|---|---|---|---|---|---|
| @SRJPEXT | 1.0000<br>( 24)<br>P= . | .9621<br>( 24)<br>P= .000 | .7622<br>( 19)<br>P= .000 | .8277<br>( 19)<br>P= .000 | .6117<br>( 14)<br>P= .010 | .6205<br>( 14)<br>P= .009 | .1302<br>( 24)<br>P= .272 | .3201<br>( 19)<br>P= .091 | .4426<br>( 14)<br>P= .057 | .3650<br>( 24)<br>P= .040 | .4746<br>( 19)<br>P= .020 |
| @SRJPMKT | .9621<br>( 24)<br>P= .000 | 1.0000<br>( 24)<br>P= . | .7052<br>( 19)<br>P= .000 | .7913<br>( 19)<br>P= .000 | .5040<br>( 14)<br>P= .033 | .5817<br>( 14)<br>P= .015 | .2300<br>( 24)<br>P= .140 | .3536<br>( 19)<br>P= .069 | .3400<br>( 14)<br>P= .117 | .3281<br>( 24)<br>P= .059 | .4274<br>( 19)<br>P= .034 |
| @SRSPEXT | .7622<br>( 19)<br>P= .000 | .7052<br>( 19)<br>P= .000 | 1.0000<br>( 19)<br>P= . | .9760<br>( 19)<br>P= .000 | .6868<br>( 14)<br>P= .003 | .7626<br>( 14)<br>P= .001 | .3702<br>( 19)<br>P= .059 | .3934<br>( 19)<br>P= .048 | .5808<br>( 14)<br>P= .015 | .4959<br>( 19)<br>P= .015 | .1419<br>( 19)<br>P= .281 |
| @SRSPMKT | .8277<br>( 19)<br>P= .000 | .7913<br>( 19)<br>P= .000 | .9760<br>( 19)<br>P= .000 | 1.0000<br>( 19)<br>P= . | .7249<br>( 14)<br>P= .002 | .7956<br>( 14)<br>P= .000 | .3144<br>( 19)<br>P= .095 | .3467<br>( 19)<br>P= .073 | .5682<br>( 14)<br>P= .017 | .4594<br>( 19)<br>P= .024 | .1555<br>( 19)<br>P= .262 |
| @SR1PEXT | .6117<br>( 14)<br>P= .010 | .5040<br>( 14)<br>P= .033 | .6868<br>( 14)<br>P= .003 | .7249<br>( 14)<br>P= .002 | 1.0000<br>( 14)<br>P= . | .9470<br>( 14)<br>P= .000 | .2233<br>( 14)<br>P= .221 | .1807<br>( 14)<br>P= .268 | .8031<br>( 14)<br>P= .000 | .5635<br>( 14)<br>P= .018 | .5101<br>( 14)<br>P= .031 |
| @SR1PMKT | .6205<br>( 14)<br>P= .009 | .5817<br>( 14)<br>P= .015 | .7626<br>( 14)<br>P= .001 | .7956<br>( 14)<br>P= .000 | .9470<br>( 14)<br>P= .000 | 1.0000<br>( 14)<br>P= . | .4112<br>( 14)<br>P= .072 | .3184<br>( 14)<br>P= .134 | .7531<br>( 14)<br>P= .001 | .6590<br>( 14)<br>P= .005 | .5282<br>( 14)<br>P= .026 |
| CONJPR | .1302<br>( 24)<br>P= .272 | .2300<br>( 24)<br>P= .140 | .3702<br>( 19)<br>P= .059 | .3144<br>( 19)<br>P= .095 | .2233<br>( 14)<br>P= .221 | .4112<br>( 14)<br>P= .072 | 1.0000<br>( 24)<br>P= . | .2613<br>( 19)<br>P= .140 | .3272<br>( 14)<br>P= .127 | .2785<br>( 24)<br>P= .094 | .0675<br>( 19)<br>P= .392 |
| CONSPR | .3201<br>( 19)<br>P= .091 | .3536<br>( 19)<br>P= .069 | .3934<br>( 19)<br>P= .048 | .3467<br>( 19)<br>P= .073 | .1807<br>( 14)<br>P= .268 | .3184<br>( 14)<br>P= .134 | .2613<br>( 19)<br>P= .140 | 1.0000<br>( 19)<br>P= . | .4409<br>( 14)<br>P= .057 | .7542<br>( 19)<br>P= .000 | .4089<br>( 19)<br>P= .041 |
| CON1PR | .4426<br>( 14)<br>P= .057 | .3400<br>( 14)<br>P= .117 | .5808<br>( 14)<br>P= .015 | .5682<br>( 14)<br>P= .017 | .8031<br>( 14)<br>P= .000 | .7531<br>( 14)<br>P= .001 | .3272<br>( 14)<br>P= .127 | .4409<br>( 14)<br>P= .057 | 1.0000<br>( 14)<br>P= . | .7265<br>( 14)<br>P= .002 | .4367<br>( 14)<br>P= .059 |
| ALFJP | .3650<br>( 24)<br>P= .040 | .3281<br>( 24)<br>P= .059 | .4959<br>( 19)<br>P= .015 | .4594<br>( 19)<br>P= .024 | .5635<br>( 14)<br>P= .018 | .6590<br>( 14)<br>P= .005 | .2785<br>( 24)<br>P= .094 | .7542<br>( 19)<br>P= .000 | .7265<br>( 14)<br>P= .002 | 1.0000<br>( 24)<br>P= . | .6337<br>( 19)<br>P= .002 |
| ALFSP | .4746<br>( 19)<br>P= .020 | .4274<br>( 19)<br>P= .034 | .1419<br>( 19)<br>P= .281 | .1555<br>( 19)<br>P= .262 | .5101<br>( 14)<br>P= .031 | .5282<br>( 14)<br>P= .026 | .0675<br>( 19)<br>P= .392 | .4089<br>( 19)<br>P= .041 | .4367<br>( 14)<br>P= .059 | .6337<br>( 19)<br>P= .002 | 1.0000<br>( 19)<br>P= . |
| ALF1P | .2256<br>( 14)<br>P= .219 | .2295<br>( 14)<br>P= .215 | .3868<br>( 14)<br>P= .086 | .4267<br>( 14)<br>P= .064 | .6414<br>( 14)<br>P= .007 | .6970<br>( 14)<br>P= .003 | .4673<br>( 14)<br>P= .046 | -.1363<br>( 14)<br>P= .321 | .4843<br>( 14)<br>P= .040 | .3770<br>( 14)<br>P= .092 | .3303<br>( 14)<br>P= .124 |
| PRF1P | .7352<br>( 14)<br>P= .001 | .6084<br>( 14)<br>P= .010 | .5874<br>( 14)<br>P= .014 | .6073<br>( 14)<br>P= .011 | .8625<br>( 14)<br>P= .000 | .7931<br>( 14)<br>P= .000 | .2028<br>( 14)<br>P= .243 | .1449<br>( 14)<br>P= .311 | .7306<br>( 14)<br>P= .001 | .5199<br>( 14)<br>P= .028 | .7295<br>( 14)<br>P= .002 |
| WORDPORT | .0420<br>( 14)<br>P= .443 | .0056<br>( 14)<br>P= .492 | -.0126<br>( 14)<br>P= .483 | .0066<br>( 14)<br>P= .491 | .2582<br>( 14)<br>P= .186 | .1223<br>( 14)<br>P= .339 | .1718<br>( 14)<br>P= .279 | -.0991<br>( 14)<br>P= .368 | .4807<br>( 14)<br>P= .041 | -.1542<br>( 14)<br>P= .299 | -.1932<br>( 14)<br>P= .254 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| @SRJEEXT | .2039 | .3513 | .1326 | .1667 | .0383 | .1961 | .3438 | .5506 | .2610 | .2431 | .1222 |
| | ( 24) | ( 24) | ( 19) | ( 19) | ( 14) | ( 14) | ( 24) | ( 19) | ( 14) | ( 24) | ( 19) |
| | p= .170 | p= .046 | p= .294 | p= .248 | p= .448 | p= .251 | p= .050 | p= .007 | p= .184 | p= .126 | p= .309 |
| @SRJEMKT | .2224 | .3685 | .1433 | .1790 | .0178 | .1643 | .3378 | .5746 | .2649 | .2150 | .1057 |
| | ( 24) | ( 24) | ( 19) | ( 19) | ( 14) | ( 14) | ( 24) | ( 19) | ( 14) | ( 24) | ( 19) |
| | p= .148 | p= .038 | p= .279 | p= .232 | p= .476 | p= .287 | p= .053 | p= .005 | p= .180 | p= .157 | p= .333 |
| @SRSEEXT | .3431 | .4709 | .2305 | .2817 | .2780 | .4302 | .2884 | .5860 | .3509 | .4580 | .2638 |
| | ( 19) | ( 19) | ( 19) | ( 19) | ( 14) | ( 14) | ( 19) | ( 19) | ( 14) | ( 19) | ( 19) |
| | p= .075 | p= .021 | p= .171 | p= .121 | p= .168 | p= .062 | p= .116 | p= .004 | p= .109 | p= .024 | p= .138 |
| @SRSEMKT | .3884 | .5081 | .2686 | .3197 | .2905 | .4535 | .2733 | .6181 | .3326 | .4966 | .3041 |
| | ( 19) | ( 19) | ( 19) | ( 19) | ( 14) | ( 14) | ( 19) | ( 19) | ( 14) | ( 19) | ( 19) |
| | p= .050 | p= .013 | p= .133 | p= .091 | p= .157 | p= .052 | p= .129 | p= .002 | p= .123 | p= .015 | p= .103 |
| @SR1EEXT | .3181 | .3940 | .1859 | .2009 | .3563 | .4428 | .1488 | .6954 | .3739 | .5104 | .4307 |
| | ( 15) | ( 15) | ( 15) | ( 15) | ( 14) | ( 14) | ( 15) | ( 15) | ( 14) | ( 15) | ( 15) |
| | p= .124 | p= .073 | p= .254 | p= .236 | p= .106 | p= .056 | p= .298 | p= .002 | p= .094 | p= .026 | p= .054 |
| @SR1EMKT | .3647 | .4302 | .2418 | .2634 | .4124 | .4883 | .1264 | .7182 | .3853 | .5350 | .4611 |
| | ( 15) | ( 15) | ( 15) | ( 15) | ( 14) | ( 14) | ( 15) | ( 15) | ( 14) | ( 15) | ( 15) |
| | p= .091 | p= .055 | p= .193 | p= .171 | p= .071 | p= .038 | p= .327 | p= .001 | p= .087 | p= .020 | p= .042 |
| CONJER | -.0745 | -.0949 | .0923 | .0157 | .1327 | .2792 | .3345 | .5729 | .3353 | .2741 | .2833 |
| | ( 24) | ( 24) | ( 19) | ( 19) | ( 14) | ( 14) | ( 24) | ( 19) | ( 14) | ( 24) | ( 19) |
| | p= .365 | p= .330 | p= .354 | p= .474 | p= .326 | p= .167 | p= .055 | p= .005 | p= .121 | p= .097 | p= .120 |
| CONSER | .2433 | .2912 | .2289 | .2108 | .2177 | .3517 | .2892 | .8279 | .5572 | .6582 | .4582 |
| | ( 19) | ( 19) | ( 19) | ( 19) | ( 14) | ( 14) | ( 19) | ( 19) | ( 14) | ( 19) | ( 19) |
| | p= .158 | p= .113 | p= .173 | p= .193 | p= .227 | p= .109 | p= .115 | p= .000 | p= .019 | p= .001 | p= .024 |
| CON1ER | .4227 | .3657 | .5316 | .5051 | .8295 | .8400 | .4431 | .5007 | .8519 | .6783 | .4594 |
| | ( 15) | ( 15) | ( 15) | ( 15) | ( 14) | ( 14) | ( 15) | ( 15) | ( 14) | ( 15) | ( 15) |
| | p= .058 | p= .090 | p= .021 | p= .027 | p= .000 | p= .000 | p= .049 | p= .029 | p= .000 | p= .003 | p= .042 |
| ALFJE | .2944 | .2469 | .4203 | .3630 | .5531 | .6304 | .2948 | .7534 | .6945 | .9398 | .6557 |
| | ( 24) | ( 24) | ( 19) | ( 19) | ( 14) | ( 14) | ( 24) | ( 19) | ( 14) | ( 24) | ( 19) |
| | p= .081 | p= .122 | p= .037 | p= .063 | p= .020 | p= .008 | p= .081 | p= .000 | p= .003 | p= .000 | p= .001 |
| ALFSE | .4616 | .4584 | .4160 | .3998 | .5225 | .6358 | .3401 | .6911 | .6754 | .8603 | .7000 |
| | ( 19) | ( 19) | ( 19) | ( 19) | ( 14) | ( 14) | ( 19) | ( 19) | ( 14) | ( 19) | ( 19) |
| | p= .023 | p= .024 | p= .038 | p= .045 | p= .028 | p= .007 | p= .077 | p= .001 | p= .004 | p= .000 | p= .000 |
| ALF1E | .3469 | .4065 | .4093 | .4362 | .5820 | .6961 | .7095 | .2121 | .6172 | .4396 | .2917 |
| | ( 15) | ( 15) | ( 15) | ( 15) | ( 14) | ( 14) | ( 15) | ( 15) | ( 14) | ( 15) | ( 15) |
| | p= .103 | p= .066 | p= .065 | p= .052 | p= .014 | p= .003 | p= .002 | p= .224 | p= .009 | p= .051 | p= .146 |
| PRF1E | .3956 | .3878 | .3051 | .2736 | .5441 | .5674 | .3136 | .3687 | .4317 | .5547 | .5456 |
| | ( 15) | ( 15) | ( 15) | ( 15) | ( 14) | ( 14) | ( 15) | ( 15) | ( 14) | ( 15) | ( 15) |
| | p= .072 | p= .077 | p= .134 | p= .162 | p= .022 | p= .017 | p= .128 | p= .088 | p= .062 | p= .016 | p= .018 |
| WORDENGL | .1074 | .1544 | .0730 | .0868 | .1810 | .2353 | .5407 | .2662 | .4203 | .1686 | .1254 |
| | ( 15) | ( 15) | ( 15) | ( 15) | ( 14) | ( 14) | ( 15) | ( 15) | ( 14) | ( 15) | ( 15) |
| | p= .352 | p= .291 | p= .398 | p= .379 | p= .268 | p= .209 | p= .019 | p= .169 | p= .067 | p= .274 | p= .328 |
| VOC1ER | .1170 | .0294 | .3023 | .2328 | .5835 | .4956 | .0999 | .5104 | .7763 | .6316 | .3078 |
| | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) |
| | p= .345 | p= .460 | p= .147 | p= .212 | p= .014 | p= .036 | p= .367 | p= .031 | p= .001 | p= .008 | p= .142 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CMP1ER | .3201 | .3216 | .0796 | .0825 | .3221 | .2977 | .1301 | .6097 | .5135 | .5342 | .6427 |
| | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) |
| | P= .132 | P= .131 | P= .393 | P= .390 | P= .131 | P= .151 | P= .329 | P= .010 | P= .030 | P= .025 | P= .007 |
| DAPJ | .1237 | .0485 | .1563 | .0700 | .6333 | .5754 | .3476 | .4459 | .7397 | .5736 | .6381 |
| | ( 23) | ( 23) | ( 18) | ( 18) | ( 13) | ( 13) | ( 23) | ( 18) | ( 13) | ( 23) | ( 18) |
| | P= .287 | P= .413 | P= .268 | P= .391 | P= .010 | P= .020 | P= .052 | P= .032 | P= .002 | P= .002 | P= .002 |
| DAPS | .1607 | .1414 | .0993 | .0757 | .3873 | .4215 | .2645 | .3894 | .5967 | .4690 | .4866 |
| | ( 19) | ( 19) | ( 19) | ( 19) | ( 14) | ( 14) | ( 19) | ( 19) | ( 14) | ( 19) | ( 19) |
| | P= .255 | P= .282 | P= .343 | P= .379 | P= .086 | P= .067 | P= .137 | P= .050 | P= .012 | P= .021 | P= .017 |
| DAP1 | .2209 | .2928 | .2180 | .2205 | .3853 | .4629 | .5912 | .3113 | .5135 | .4281 | .4056 |
| | ( 15) | ( 15) | ( 15) | ( 15) | ( 14) | ( 14) | ( 15) | ( 15) | ( 14) | ( 15) | ( 15) |
| | P= .214 | P= .145 | P= .218 | P= .215 | P= .087 | P= .048 | P= .010 | P= .129 | P= .030 | P= .056 | P= .067 |
| ORALRATE | .6040 | .5892 | .4748 | .4347 | .4383 | .5189 | .2775 | .5380 | .2751 | .5527 | .6677 |
| | ( 20) | ( 20) | ( 19) | ( 19) | ( 14) | ( 14) | ( 20) | ( 19) | ( 14) | ( 20) | ( 19) |
| | P= .002 | P= .003 | P= .020 | P= .031 | P= .059 | P= .029 | P= .118 | P= .009 | P= .171 | P= .006 | P= .001 |

(COEFFICIENT / (CASES) / 1-TAILED SIG)  " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED

PEARSON CORRELATION COEFFICIENTS

| | ALF1P | PRF1P | WORDPORT | @SRJEEXT | @SRJEMKT | @SRSEEXT | @SRSEMKT | @SR1EEXT | @SR1EMKT | CONJER | CONSER |
|---|---|---|---|---|---|---|---|---|---|---|---|
| @SRJPEXT | .2256 ( 14) p= .219 | .7352 ( 14) p= .001 | .0420 ( 14) p= .443 | .2039 ( 24) p= .170 | .2224 ( 24) p= .148 | .3431 ( 19) p= .075 | .3884 ( 19) p= .050 | .3181 ( 15) p= .124 | .3647 ( 15) p= .091 | -.0745 ( 24) p= .365 | .2433 ( 19) p= .158 |
| @SRJPMKT | .2295 ( 14) p= .215 | .6084 ( 14) p= .010 | .0056 ( 14) p= .492 | .3513 ( 24) p= .046 | .3685 ( 24) p= .038 | .4709 ( 19) p= .021 | .5081 ( 19) p= .013 | .3940 ( 15) p= .073 | .4302 ( 15) p= .055 | -.0949 ( 24) p= .330 | .2912 ( 19) p= .113 |
| @SRSPEXT | .3868 ( 14) p= .086 | .5874 ( 14) p= .014 | -.0126 ( 14) p= .483 | .1326 ( 19) p= .294 | .1433 ( 19) p= .279 | .2305 ( 19) p= .171 | .2686 ( 19) p= .133 | .1859 ( 15) p= .254 | .2418 ( 15) p= .193 | .0923 ( 19) p= .354 | .2289 ( 19) p= .173 |
| @SRSPMKT | .4267 ( 14) p= .064 | .6073 ( 14) p= .011 | .0066 ( 14) p= .491 | .1667 ( 19) p= .248 | .1790 ( 19) p= .232 | .2817 ( 19) p= .121 | .3197 ( 19) p= .091 | .2009 ( 15) p= .236 | .2634 ( 15) p= .171 | .0157 ( 19) p= .474 | .2108 ( 19) p= .193 |
| @SR1PEXT | .6414 ( 14) p= .007 | .8625 ( 14) p= .000 | .2582 ( 14) p= .186 | .0383 ( 14) p= .448 | .0178 ( 14) p= .476 | .2780 ( 14) p= .168 | .2905 ( 14) p= .157 | .3563 ( 14) p= .106 | .4124 ( 14) p= .071 | .1327 ( 14) p= .326 | .2177 ( 14) p= .227 |
| @SR1PMKT | .6970 ( 14) p= .003 | .7931 ( 14) p= .000 | .1223 ( 14) p= .339 | .1961 ( 14) p= .251 | .1643 ( 14) p= .287 | .4302 ( 14) p= .062 | .4535 ( 14) p= .052 | .4428 ( 14) p= .056 | .4883 ( 14) p= .038 | .2792 ( 14) p= .167 | .3517 ( 14) p= .109 |
| CONJPR | .4673 ( 14) p= .046 | .2028 ( 14) p= .243 | .1718 ( 14) p= .279 | .3438 ( 24) p= .050 | .3378 ( 24) p= .053 | .2884 ( 19) p= .116 | .2733 ( 19) p= .129 | .1488 ( 15) p= .298 | .1264 ( 15) p= .327 | .3345 ( 24) p= .055 | .2892 ( 19) p= .115 |
| CONSPR | -.1363 ( 14) p= .321 | .1449 ( 14) p= .311 | -.0991 ( 14) p= .368 | .5506 ( 19) p= .007 | .5746 ( 19) p= .005 | .5860 ( 19) p= .004 | .6181 ( 19) p= .002 | .6954 ( 15) p= .002 | .7182 ( 15) p= .001 | .5729 ( 19) p= .005 | .8279 ( 19) p= .000 |
| CON1PR | .4843 ( 14) p= .040 | .7306 ( 14) p= .001 | .4807 ( 14) p= .041 | .2610 ( 14) p= .184 | .2649 ( 14) p= .180 | .3509 ( 14) p= .109 | .3326 ( 14) p= .123 | .3739 ( 14) p= .094 | .3853 ( 14) p= .087 | .3353 ( 14) p= .121 | .5572 ( 14) p= .019 |
| ALFJP | .3770 ( 14) p= .092 | .5199 ( 14) p= .028 | -.1542 ( 14) p= .299 | .2431 ( 24) p= .126 | .2150 ( 24) p= .157 | .4580 ( 19) p= .024 | .4966 ( 19) p= .015 | .5104 ( 15) p= .026 | .5350 ( 15) p= .020 | .2741 ( 24) p= .097 | .6582 ( 19) p= .001 |
| ALFSP | .3303 ( 14) p= .124 | .7295 ( 14) p= .002 | -.1932 ( 14) p= .254 | .1222 ( 19) p= .309 | .1057 ( 19) p= .333 | .2638 ( 19) p= .138 | .3041 ( 19) p= .103 | .4307 ( 15) p= .054 | .4611 ( 15) p= .042 | .2833 ( 19) p= .120 | .4582 ( 19) p= .024 |
| ALF1P | 1.0000 ( 14) p= . | .4689 ( 14) p= .045 | .0662 ( 14) p= .411 | -.0276 ( 14) p= .463 | -.0704 ( 14) p= .406 | -.0457 ( 14) p= .438 | -.0229 ( 14) p= .469 | -.0580 ( 14) p= .422 | -.0490 ( 14) p= .434 | .0723 ( 14) p= .403 | .0524 ( 14) p= .429 |
| PRF1P | .4689 ( 14) p= .045 | 1.0000 ( 14) p= . | .1825 ( 14) p= .266 | -.0229 ( 14) p= .469 | -.0493 ( 14) p= .434 | .2666 ( 14) p= .178 | .2751 ( 14) p= .171 | .2550 ( 14) p= .190 | .2916 ( 14) p= .156 | .0748 ( 14) p= .400 | .2482 ( 14) p= .196 |
| WORDPORT | .0662 ( 14) p= .411 | .1825 ( 14) p= .266 | 1.0000 ( 14) p= . | .2285 ( 14) p= .216 | .3224 ( 14) p= .130 | -.0177 ( 14) p= .476 | -.0713 ( 14) p= .404 | .0268 ( 14) p= .464 | -.0051 ( 14) p= .493 | .1665 ( 14) p= .285 | .0550 ( 14) p= .426 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| @SRJEEXT | -.0276<br>( 14)<br>p= .463 | -.0229<br>( 14)<br>p= .469 | .2285<br>( 14)<br>p= .216 | 1.0000<br>( 24)<br>p= . | .9880<br>( 24)<br>p= .000 | .7281<br>( 19)<br>p= .000 | .7109<br>( 19)<br>p= .000 | .6463<br>( 15)<br>p= .005 | .5929<br>( 15)<br>p= .010 | .0987<br>( 24)<br>p= .323 | .5505<br>( 19)<br>p= .007 |
| @SRJEMKT | -.0704<br>( 14)<br>p= .406 | -.0493<br>( 14)<br>p= .434 | .3224<br>( 14)<br>p= .130 | .9880<br>( 24)<br>p= .000 | 1.0000<br>( 24)<br>p= . | .6976<br>( 19)<br>p= .000 | .6816<br>( 19)<br>p= .001 | .6460<br>( 15)<br>p= .005 | .5907<br>( 15)<br>p= .010 | .0987<br>( 24)<br>p= .323 | .5796<br>( 19)<br>p= .005 |
| @SRSEEXT | -.0457<br>( 14)<br>p= .438 | .2666<br>( 14)<br>p= .178 | -.0177<br>( 14)<br>p= .476 | .7281<br>( 19)<br>p= .000 | .6976<br>( 19)<br>p= .000 | 1.0000<br>( 19)<br>p= . | .9871<br>( 19)<br>p= .000 | .8780<br>( 15)<br>p= .000 | .8510<br>( 15)<br>p= .000 | .2719<br>( 19)<br>p= .130 | .6288<br>( 19)<br>p= .002 |
| @SRSEMKT | -.0229<br>( 14)<br>p= .469 | .2751<br>( 14)<br>p= .171 | -.0713<br>( 14)<br>p= .404 | .7109<br>( 19)<br>p= .000 | .6816<br>( 19)<br>p= .001 | .9871<br>( 19)<br>p= .000 | 1.0000<br>( 19)<br>p= . | .8759<br>( 15)<br>p= .000 | .8509<br>( 15)<br>p= .000 | .2860<br>( 19)<br>p= .118 | .6473<br>( 19)<br>p= .001 |
| @SR1EEXT | -.0580<br>( 14)<br>p= .422 | .2550<br>( 14)<br>p= .190 | .0268<br>( 14)<br>p= .464 | .6463<br>( 15)<br>p= .005 | .6460<br>( 15)<br>p= .005 | .8780<br>( 15)<br>p= .000 | .8759<br>( 15)<br>p= .000 | 1.0000<br>( 15)<br>p= . | .9853<br>( 15)<br>p= .000 | .5079<br>( 15)<br>p= .027 | .6530<br>( 15)<br>p= .004 |
| @SR1EMKT | -.0490<br>( 14)<br>p= .434 | .2916<br>( 14)<br>p= .156 | -.0051<br>( 14)<br>p= .493 | .5929<br>( 15)<br>p= .010 | .5907<br>( 15)<br>p= .010 | .8510<br>( 15)<br>p= .000 | .8509<br>( 15)<br>p= .000 | .9853<br>( 15)<br>p= .000 | 1.0000<br>( 15)<br>p= . | .5167<br>( 15)<br>p= .024 | .6338<br>( 15)<br>p= .006 |
| CONJER | .0723<br>( 14)<br>p= .403 | .0748<br>( 14)<br>p= .400 | .1665<br>( 14)<br>p= .285 | .0987<br>( 24)<br>p= .323 | .0987<br>( 24)<br>p= .323 | .2719<br>( 19)<br>p= .130 | .2860<br>( 19)<br>p= .118 | .5079<br>( 15)<br>p= .027 | .5167<br>( 15)<br>p= .024 | 1.0000<br>( 24)<br>p= . | .3338<br>( 19)<br>p= .081 |
| CONSER | .0524<br>( 14)<br>p= .429 | .2482<br>( 14)<br>p= .196 | .0550<br>( 14)<br>p= .426 | .5505<br>( 19)<br>p= .007 | .5796<br>( 19)<br>p= .005 | .6288<br>( 19)<br>p= .002 | .6473<br>( 19)<br>p= .001 | .6530<br>( 15)<br>p= .004 | .6338<br>( 15)<br>p= .006 | .3338<br>( 19)<br>p= .081 | 1.0000<br>( 19)<br>p= . |
| CON1ER | .4787<br>( 14)<br>p= .042 | .6946<br>( 14)<br>p= .003 | .3444<br>( 14)<br>p= .114 | .3839<br>( 15)<br>p= .079 | .3661<br>( 15)<br>p= .090 | .5520<br>( 15)<br>p= .016 | .5810<br>( 15)<br>p= .012 | .6114<br>( 15)<br>p= .008 | .6261<br>( 15)<br>p= .006 | .5264<br>( 15)<br>p= .022 | .5439<br>( 15)<br>p= .018 |
| ALFJE | .3780<br>( 14)<br>p= .091 | .4854<br>( 14)<br>p= .039 | -.0900<br>( 14)<br>p= .380 | .1717<br>( 24)<br>p= .211 | .1540<br>( 24)<br>p= .236 | .3296<br>( 19)<br>p= .084 | .3671<br>( 19)<br>p= .061 | .4844<br>( 15)<br>p= .034 | .5412<br>( 15)<br>p= .019 | .4047<br>( 24)<br>p= .025 | .6010<br>( 19)<br>p= .003 |
| ALFSE | .4851<br>( 14)<br>p= .039 | .4879<br>( 14)<br>p= .038 | -.0256<br>( 14)<br>p= .465 | .4478<br>( 19)<br>p= .027 | .4447<br>( 19)<br>p= .028 | .4413<br>( 19)<br>p= .029 | .4960<br>( 19)<br>p= .015 | .6184<br>( 15)<br>p= .007 | .5979<br>( 15)<br>p= .009 | .4960<br>( 19)<br>p= .015 | .7070<br>( 19)<br>p= .000 |
| ALF1E | .7345<br>( 14)<br>p= .001 | .4180<br>( 14)<br>p= .068 | .3573<br>( 14)<br>p= .105 | .4408<br>( 15)<br>p= .050 | .4231<br>( 15)<br>p= .058 | .3514<br>( 15)<br>p= .100 | .3726<br>( 15)<br>p= .086 | .3755<br>( 15)<br>p= .084 | .3448<br>( 15)<br>p= .104 | .5470<br>( 15)<br>p= .017 | .3797<br>( 15)<br>p= .081 |
| PRF1E | .2201<br>( 14)<br>p= .225 | .5600<br>( 14)<br>p= .019 | -.0604<br>( 14)<br>p= .419 | .2749<br>( 15)<br>p= .161 | .2208<br>( 15)<br>p= .215 | .7144<br>( 15)<br>p= .001 | .7234<br>( 15)<br>p= .001 | .6927<br>( 15)<br>p= .002 | .6778<br>( 15)<br>p= .003 | .4535<br>( 15)<br>p= .045 | .3270<br>( 15)<br>p= .117 |
| WORDENGL | .1049<br>( 14)<br>p= .361 | .1917<br>( 14)<br>p= .256 | .5186<br>( 14)<br>p= .029 | .1627<br>( 15)<br>p= .281 | .2421<br>( 15)<br>p= .192 | .3291<br>( 15)<br>p= .116 | .2975<br>( 15)<br>p= .141 | .2942<br>( 15)<br>p= .144 | .2739<br>( 15)<br>p= .162 | .4020<br>( 15)<br>p= .069 | .5579<br>( 15)<br>p= .015 |
| VOC1ER | .1639<br>( 14)<br>p= .288 | .4994<br>( 14)<br>p= .035 | .3186<br>( 14)<br>p= .133 | .3645<br>( 14)<br>p= .100 | .3517<br>( 14)<br>p= .109 | .4655<br>( 14)<br>p= .047 | .4064<br>( 14)<br>p= .075 | .4931<br>( 14)<br>p= .037 | .5052<br>( 14)<br>p= .033 | .2902<br>( 14)<br>p= .157 | .4834<br>( 14)<br>p= .040 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| CMP1ER | -.0461 | .4432 | .2326 | .1855 | .2490 | .5869 | .5648 | .5764 | .5889 | .3517 | .7743 |
| | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) |
| | P= .438 | P= .056 | P= .212 | P= .263 | P= .195 | P= .014 | P= .018 | P= .015 | P= .013 | P= .109 | P= .001 |
| DAPJ | .1472 | .6973 | .1936 | -.0385 | -.0252 | .0833 | .0535 | .3741 | .4404 | .1490 | .3544 |
| | ( 13) | ( 13) | ( 13) | ( 23) | ( 23) | ( 18) | ( 18) | ( 14) | ( 14) | ( 23) | ( 18) |
| | P= .316 | P= .004 | P= .263 | P= .431 | P= .455 | P= .371 | P= .416 | P= .094 | P= .058 | P= .249 | P= .075 |
| DAPS | .0556 | .5514 | .3474 | .2647 | .2845 | .2764 | .2481 | .4027 | .3629 | .4462 | .3059 |
| | ( 14) | ( 14) | ( 14) | ( 19) | ( 19) | ( 19) | ( 19) | ( 15) | ( 15) | ( 19) | ( 19) |
| | P= .425 | P= .020 | P= .112 | P= .137 | P= .119 | P= .126 | P= .153 | P= .068 | P= .092 | P= .028 | P= .101 |
| DAP1 | .2770 | .4830 | .2560 | .1262 | .1513 | .5083 | .4406 | .2644 | .2848 | .4120 | .4836 |
| | ( 14) | ( 14) | ( 14) | ( 15) | ( 15) | ( 15) | ( 15) | ( 15) | ( 15) | ( 15) | ( 15) |
| | P= .169 | P= .040 | P= .189 | P= .327 | P= .295 | P= .027 | P= .050 | P= .170 | P= .152 | P= .064 | P= .034 |
| ORALRATE | .1237 | .5725 | -.2317 | .2647 | .2842 | .4037 | .4536 | .5825 | .6084 | .3065 | .3990 |
| | ( 14) | ( 14) | ( 14) | ( 20) | ( 20) | ( 19) | ( 19) | ( 15) | ( 15) | ( 20) | ( 19) |
| | P= .337 | P= .016 | P= .213 | P= .130 | P= .112 | P= .043 | P= .026 | P= .011 | P= .008 | P= .094 | P= .045 |

(COEFFICIENT / (CASES) / 1-TAILED SIG) " . " IS PRINTED IF A COEFFICIENT CANNOT BE COMPUTED



1 - - - - - - - - - - - - - - - P E A R S O N C O R R E L A T I O N C O E F F I C I E N T S - - - - - - - - - - - - - -

| | CON1ER | ALFJE | ALFSE | ALF1E | PRF1E | WORDENGL | VOC1ER | CMP1ER | DAPJ | DAPS | DAP1 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| @SRJPEXT | .4227 | .2944 | .4616 | .3469 | .3956 | .1074 | .1170 | .3201 | .1237 | .1607 | .2209 |
| | ( 15) | ( 24) | ( 19) | ( 15) | ( 15) | ( 15) | ( 14) | ( 14) | ( 23) | ( 19) | ( 15) |
| | P= .058 | P= .081 | P= .023 | P= .103 | P= .072 | P= .352 | P= .345 | P= .132 | P= .287 | P= .255 | P= .214 |
| @SRJPMKT | .3657 | .2469 | .4584 | .4065 | .3878 | .1544 | .0294 | .3216 | .0485 | .1414 | .2928 |
| | ( 15) | ( 24) | ( 19) | ( 15) | ( 15) | ( 15) | ( 14) | ( 14) | ( 23) | ( 19) | ( 15) |
| | P= .090 | P= .124 | P= .024 | P= .066 | P= .077 | P= .291 | P= .460 | P= .131 | P= .413 | P= .282 | P= .145 |
| @SRSPEXT | .5316 | .4203 | .4160 | .4093 | .3051 | .0730 | .3023 | .0796 | .1563 | .0993 | .2180 |
| | ( 15) | ( 19) | ( 19) | ( 15) | ( 15) | ( 15) | ( 14) | ( 14) | ( 18) | ( 19) | ( 15) |
| | P= .021 | P= .037 | P= .038 | P= .065 | P= .134 | P= .398 | P= .147 | P= .393 | P= .268 | P= .343 | P= .218 |
| @SRSPMKT | .5051 | .3630 | .3998 | .4362 | .2736 | .0868 | .2328 | .0825 | .0700 | .0757 | .2205 |
| | ( 15) | ( 19) | ( 19) | ( 15) | ( 15) | ( 15) | ( 14) | ( 14) | ( 18) | ( 19) | ( 15) |
| | P= .027 | P= .063 | P= .045 | P= .052 | P= .162 | P= .379 | P= .212 | P= .390 | P= .391 | P= .379 | P= .215 |
| @SR1PEXT | .8295 | .5531 | .5225 | .5820 | .5441 | .1810 | .5835 | .3221 | .6333 | .3873 | .3853 |
| | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 13) | ( 14) | ( 14) |
| | P= .000 | P= .020 | P= .028 | P= .014 | P= .022 | P= .268 | P= .014 | P= .131 | P= .010 | P= .086 | P= .087 |
| @SR1PMKT | .8400 | .6304 | .6358 | .6961 | .5674 | .2353 | .4956 | .2977 | .5754 | .4215 | .4629 |
| | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 14) | ( 13) | ( 14) | ( 14) |
| | P= .000 | P= .008 | P= .007 | P= .003 | P= .017 | P= .209 | P= .036 | P= .151 | P= .020 | P= .067 | P= .048 |
| CONJPR | .4431 | .2948 | .3401 | .7095 | .3136 | .5407 | .0999 | .1301 | .3476 | .2645 | .5912 |
| | ( 15) | ( 24) | ( 19) | ( 15) | ( 15) | ( 15) | ( 14) | ( 14) | ( 23) | ( 19) | ( 15) |
| | P= .049 | P= .081 | P= .077 | P= .002 | P= .128 | P= .019 | P= .367 | P= .329 | P= .052 | P= .137 | P= .010 |
| CONSPR | .5007 | .7534 | .6911 | .2121 | .3687 | .2662 | .5104 | .6097 | .4459 | .3894 | .3113 |

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|---|---|---|---|---|---|---|---|---|---|---|---|
| | ( 15)<br>P= .029 | ( 19)<br>P= .000 | ( 19)<br>P= .001 | ( 15)<br>P= .224 | ( 15)<br>P= .088 | ( 15)<br>P= .169 | ( 14)<br>P= .031 | ( 14)<br>P= .010 | ( 18)<br>P= .032 | ( 19)<br>P= .050 | ( 15)<br>P= .129 |
| CON1PR | .8519<br>( 14)<br>P= .000 | .6945<br>( 14)<br>P= .003 | .6754<br>( 14)<br>P= .004 | .6172<br>( 14)<br>P= .009 | .4917<br>( 14)<br>P= .062 | .4203<br>( 14)<br>P= .067 | .7763<br>( 14)<br>P= .001 | .5135<br>( 14)<br>P= .030 | .7397<br>( 13)<br>P= .002 | .5967<br>( 14)<br>P= .012 | .5135<br>( 14)<br>P= .030 |
| ALFJP | .6783<br>( 15)<br>P= .003 | .9398<br>( 24)<br>P= .000 | .8603<br>( 19)<br>P= .000 | .4396<br>( 15)<br>P= .051 | .5347<br>( 15)<br>P= .016 | .1686<br>( 15)<br>P= .274 | .6316<br>( 14)<br>P= .008 | .5342<br>( 14)<br>P= .025 | .5736<br>( 23)<br>P= .002 | .4690<br>( 19)<br>P= .021 | .4281<br>( 15)<br>P= .056 |
| ALFSP | .4594<br>( 15)<br>P= .042 | .6557<br>( 19)<br>P= .001 | .7000<br>( 19)<br>P= .000 | .2917<br>( 15)<br>P= .146 | .5456<br>( 15)<br>P= .018 | .1254<br>( 15)<br>P= .328 | .3078<br>( 14)<br>P= .142 | .6427<br>( 14)<br>P= .007 | .6381<br>( 18)<br>P= .002 | .4866<br>( 19)<br>P= .017 | .4056<br>( 15)<br>P= .067 |
| ALF1P | .4787<br>( 14)<br>P= .042 | .3780<br>( 14)<br>P= .091 | .4851<br>( 14)<br>P= .039 | .7345<br>( 14)<br>P= .001 | .2201<br>( 14)<br>P= .225 | .1049<br>( 14)<br>P= .361 | .1639<br>( 14)<br>P= .288 | -.0461<br>( 14)<br>P= .438 | .1472<br>( 13)<br>P= .316 | .0556<br>( 14)<br>P= .425 | .2770<br>( 14)<br>P= .169 |
| PRF1P | .6946<br>( 14)<br>P= .003 | .4854<br>( 14)<br>P= .039 | .4879<br>( 14)<br>P= .038 | .4180<br>( 14)<br>P= .068 | .5600<br>( 14)<br>P= .019 | .1917<br>( 14)<br>P= .256 | .4994<br>( 14)<br>P= .035 | .4432<br>( 14)<br>P= .056 | .6973<br>( 13)<br>P= .004 | .5514<br>( 14)<br>P= .020 | .4830<br>( 14)<br>P= .040 |
| WORDPORT | .3444<br>( 14)<br>P= .114 | -.0900<br>( 14)<br>P= .380 | -.0256<br>( 14)<br>P= .465 | .3573<br>( 14)<br>P= .105 | -.0604<br>( 14)<br>P= .419 | .5186<br>( 14)<br>P= .029 | .3186<br>( 14)<br>P= .133 | .2326<br>( 14)<br>P= .212 | .1936<br>( 13)<br>P= .263 | .3474<br>( 14)<br>P= .112 | .2560<br>( 14)<br>P= .189 |
| @SRJEEXT | .3839<br>( 15)<br>P= .079 | .1717<br>( 24)<br>P= .211 | .4478<br>( 19)<br>P= .027 | .4408<br>( 15)<br>P= .050 | .2749<br>( 15)<br>P= .161 | .1627<br>( 15)<br>P= .281 | .3645<br>( 14)<br>P= .100 | .1855<br>( 14)<br>P= .263 | -.0385<br>( 23)<br>P= .431 | .2647<br>( 19)<br>P= .137 | .1262<br>( 15)<br>P= .327 |
| @SRJEMKT | .3661<br>( 15)<br>P= .090 | .1540<br>( 24)<br>P= .236 | .4447<br>( 19)<br>P= .028 | .4231<br>( 15)<br>P= .058 | .2208<br>( 15)<br>P= .215 | .2421<br>( 15)<br>P= .192 | .3517<br>( 14)<br>P= .109 | .2490<br>( 14)<br>P= .195 | -.0252<br>( 23)<br>P= .455 | .2845<br>( 19)<br>P= .119 | .1513<br>( 15)<br>P= .295 |
| @SRSEEXT | .5520<br>( 15)<br>P= .016 | .3296<br>( 19)<br>P= .084 | .4413<br>( 19)<br>P= .029 | .3514<br>( 15)<br>P= .100 | .7144<br>( 15)<br>P= .001 | .3291<br>( 15)<br>P= .116 | .4655<br>( 14)<br>P= .047 | .5869<br>( 14)<br>P= .014 | .0833<br>( 18)<br>P= .371 | .2764<br>( 19)<br>P= .126 | .5083<br>( 15)<br>P= .027 |
| @SRSEMKT | .5810<br>( 15)<br>P= .012 | .3671<br>( 19)<br>P= .061 | .4960<br>( 19)<br>P= .015 | .3726<br>( 15)<br>P= .086 | .7234<br>( 15)<br>P= .001 | .2975<br>( 15)<br>P= .141 | .4064<br>( 14)<br>P= .075 | .5648<br>( 14)<br>P= .018 | .0535<br>( 18)<br>P= .416 | .2481<br>( 19)<br>P= .153 | .4406<br>( 15)<br>P= .050 |
| @SR1EEXT | .6114<br>( 15)<br>P= .008 | .4844<br>( 15)<br>P= .034 | .6184<br>( 15)<br>P= .007 | .3755<br>( 15)<br>P= .084 | .6927<br>( 15)<br>P= .002 | .2942<br>( 15)<br>P= .144 | .4931<br>( 14)<br>P= .037 | .5764<br>( 14)<br>P= .015 | .3741<br>( 14)<br>P= .094 | .4027<br>( 15)<br>P= .068 | .2644<br>( 15)<br>P= .170 |
| @SR1EMKT | .6261<br>( 15)<br>P= .006 | .5412<br>( 15)<br>P= .019 | .5979<br>( 15)<br>P= .009 | .3448<br>( 15)<br>P= .104 | .6778<br>( 15)<br>P= .003 | .2739<br>( 15)<br>P= .162 | .5052<br>( 14)<br>P= .033 | .5889<br>( 14)<br>P= .013 | .4404<br>( 14)<br>P= .058 | .3629<br>( 15)<br>P= .092 | .2848<br>( 15)<br>P= .152 |
| CONJER | .5264<br>( 15)<br>P= .022 | .4047<br>( 24)<br>P= .025 | .4960<br>( 19)<br>P= .015 | .5470<br>( 15)<br>P= .017 | .4535<br>( 15)<br>P= .045 | .4020<br>( 15)<br>P= .069 | .2902<br>( 14)<br>P= .157 | .3517<br>( 14)<br>P= .109 | .1490<br>( 23)<br>P= .249 | .4462<br>( 19)<br>P= .028 | .4120<br>( 15)<br>P= .064 |
| CONSER | .5439<br>( 15)<br>P= .018 | .6010<br>( 19)<br>P= .003 | .7070<br>( 19)<br>P= .000 | .3797<br>( 15)<br>P= .081 | .3270<br>( 15)<br>P= .117 | .5579<br>( 15)<br>P= .015 | .4834<br>( 14)<br>P= .040 | .7743<br>( 14)<br>P= .001 | .3544<br>( 18)<br>P= .075 | .3059<br>( 19)<br>P= .101 | .4836<br>( 15)<br>P= .034 |
| CON1ER | 1.0000 | .7049 | .6914 | .7085 | .7015 | .3888 | .7174 | .5113 | .7072 | .4189 | .4076 |

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | ( 15) p= . | ( 15) p= .002 | ( 15) p= .002 | ( 15) p= .002 | ( 15) p= .002 | ( 15) p= .076 | ( 14) p= .002 | ( 14) p= .031 | ( 14) p= .002 | ( 15) p= .060 | ( 15) p= .066 |
| ALFJE | .7049 ( 15) p= .002 | 1.0000 ( 24) p= . | .8182 ( 19) p= .000 | .4427 ( 15) p= .049 | .3353 ( 15) p= .020 | .1826 ( 15) p= .257 | .6496 ( 14) p= .006 | .5676 ( 14) p= .017 | .6567 ( 23) p= .000 | .4199 ( 19) p= .037 | .4593 ( 15) p= .043 |
| ALFSE | .6914 ( 15) p= .002 | .8182 ( 19) p= .000 | 1.0000 ( 19) p= . | .6745 ( 15) p= .003 | .5693 ( 15) p= .013 | .2522 ( 15) p= .182 | .4753 ( 14) p= .043 | .5130 ( 14) p= .030 | .4474 ( 18) p= .031 | .3963 ( 19) p= .047 | .2910 ( 15) p= .146 |
| ALF1E | .7085 ( 15) p= .002 | .4427 ( 15) p= .049 | .6745 ( 15) p= .003 | 1.0000 ( 15) p= . | .3927 ( 15) p= .074 | .5124 ( 15) p= .025 | .2138 ( 14) p= .232 | .1472 ( 14) p= .308 | .3759 ( 14) p= .093 | .2260 ( 15) p= .209 | .3543 ( 15) p= .098 |
| PRF1E | .7015 ( 15) p= .002 | .3353 ( 15) p= .020 | .5693 ( 15) p= .013 | .3927 ( 15) p= .074 | 1.0000 ( 15) p= . | .1227 ( 15) p= .332 | .5425 ( 14) p= .023 | .5048 ( 14) p= .033 | .5363 ( 14) p= .024 | .4151 ( 15) p= .062 | .3742 ( 15) p= .085 |
| WORDENGL | .3888 ( 15) p= .076 | .1826 ( 15) p= .257 | .2522 ( 15) p= .182 | .5124 ( 15) p= .025 | .1227 ( 15) p= .332 | 1.0000 ( 15) p= . | .0889 ( 14) p= .381 | .5749 ( 14) p= .016 | .3673 ( 14) p= .098 | .3282 ( 15) p= .116 | .7163 ( 15) p= .001 |
| VOC1ER | .7174 ( 14) p= .002 | .6496 ( 14) p= .006 | .4753 ( 14) p= .043 | .2138 ( 14) p= .232 | .5425 ( 14) p= .023 | .0889 ( 14) p= .381 | 1.0000 ( 14) p= . | .5362 ( 14) p= .024 | .7428 ( 13) p= .002 | .5610 ( 14) p= .018 | .3688 ( 14) p= .097 |
| CMP1ER | .5113 ( 14) p= .031 | .5676 ( 14) p= .017 | .5130 ( 14) p= .030 | .1472 ( 14) p= .308 | .5048 ( 14) p= .033 | .5749 ( 14) p= .016 | .5362 ( 14) p= .024 | 1.0000 ( 14) p= . | .7767 ( 13) p= .001 | .6359 ( 14) p= .007 | .7518 ( 14) p= .001 |
| DAPJ | .7072 ( 14) p= .002 | .6567 ( 23) p= .000 | .4474 ( 18) p= .031 | .3759 ( 14) p= .093 | .5363 ( 14) p= .024 | .3673 ( 14) p= .098 | .7428 ( 13) p= .002 | .7767 ( 13) p= .001 | 1.0000 ( 23) p= . | .6366 ( 18) p= .002 | .6732 ( 14) p= .004 |
| DAPS | .4189 ( 15) p= .060 | .4199 ( 19) p= .037 | .3963 ( 19) p= .047 | .2260 ( 15) p= .209 | .4151 ( 15) p= .062 | .3282 ( 15) p= .116 | .5610 ( 14) p= .018 | .6359 ( 14) p= .007 | .6366 ( 18) p= .002 | 1.0000 ( 19) p= . | .5871 ( 15) p= .011 |
| DAP1 | .4076 ( 15) p= .066 | .4593 ( 15) p= .043 | .2910 ( 15) p= .146 | .3543 ( 15) p= .098 | .3742 ( 15) p= .085 | .7163 ( 15) p= .001 | .3688 ( 14) p= .097 | .7518 ( 14) p= .001 | .6732 ( 14) p= .004 | .5871 ( 15) p= .011 | 1.0000 ( 15) p= . |
| ORALRATE | .5124 ( 15) p= .025 | .6086 ( 20) p= .002 | .5964 ( 19) p= .004 | .2179 ( 15) p= .218 | .7844 ( 15) p= .000 | .0607 ( 15) p= .415 | .3520 ( 14) p= .109 | .5742 ( 14) p= .016 | .4870 ( 19) p= .017 | .3114 ( 19) p= .097 | .4003 ( 15) p= .070 |

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